THE BUILDER

Incorporating

ARCHITECTURE & THE BRITISH ARCHITECT

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THIS WEEK'S NEWS

DETAILS are given of three important architectural appointments which are open. These are: Chief architect and planning officer to the Stevenage Development Corporation, chief architect to the Crawley Development Corporation and Senior Depute City Architect to the Edinburgh Corporation. p. 211

DELIVERING the annual criticisms of the prizes and studentships at the R.I.B.A. on Tuesday, Mr. Donald H. McMorran, F.R.I.B.A., said "if we are to judge by this year's work, surely none of us, teachers or students—and most of us are students—can feel very happy about the way we are going." p. 214

THE CONTENTION that the procedure for obtaining steel authorisation is unduly complicated is put forward in a letter, "Steel for the Job." p. 216

THE SUCCESSFUL CANDIDATES in the final and special final examinations of the Royal Institute of British Architects are listed on p. 232

THE NEED for making greater use of the results of building research and the desirability of initiating more research on its own account were points made by the Minister of Works at the annual dinner of the National Federation of Building Trades' Employers in London recently. p. 233

DETAILS of the educational building programme for 1952 were made public on February 4 by the Minister of Education, Miss Florence Horsbrugh. p. 238

THE TEXT of a new Bill designed to help local authorities carry out town development in rural or small urban areas to relieve congestion elsewhere has been published. p. 239

LIVING IN FLATS

WE welcome the report on "Living in Flats" of the Sub-Committee appointed by the Central Housing and Advisory Committee in July, 1950, and issued by the Ministry of Housing and Local Government* on the social needs and problems of families living in large blocks of flats.

Their terms of reference, they state, were implicit in the assumption that families living in large blocks of flats experience problems not shared, at any rate to the same extent, by families living in separate houses. On the debit side they put greater exposure to noise, less assurance of privacy and lack of a garden or yard entirely their own. On the other side they state that large blocks of flats may have the effect of creating some sort of community sense to a greater extent than any street of houses. They also state that "The weight of evidence submitted to us, confirmed by our own impressions formed in visiting large estates of flats, has convinced us that, after all practicable measures have been taken to meet the social needs of families living on such estates, it will still be desirable to provide even in central areas the maximum amount of accommodation for families with children in houses and maisonettes rather than in flats."

If this statement is considered seriously, then the proportion of houses to flats in built-up areas will have to be entirely reviewed. The Sub-Committee cite the County of London as having built between 1945 and October, 1951, on their flatted estates, 81 houses and 13,012 flats and the Metropolitan Borough Councils 2,630 houses and 13,374 flats, and that 15 of the 28 Metropolitan Borough Councils had up to that date built nothing but flats since the war. They give as the reasons for this overwhelming preponderance of flat dwellings the widespread belief that densities high enough to suit the expensive land in the central areas of London and other large cities cannot be obtained if houses are included, and that under present arrangements a higher subsidy is paid by the Exchequer for a flat than for a house.

There is a definite preference shown in the report for maisonettes, even multi-storeyed, rather than for flats because there are half the number of dwellings in the same height; direct access is needed only to every other floor; and they prove less expensive than blocks of flats of the same height. Balcony access, however, is essential in a maisonette. Yet in comparing balcony and staircase access to flats they state in para. 57—"So important a factor is privacy that balcony access might have been generally abandoned but for the no less important factor of cost."

Great stress is made in this report on the treatment of space around the flats and emphasis is placed on providing individual gardens wherever possible where the younger children can play. Allotments are also considered desirable.

In our opinion too much emphasis may have been given to the subject of individual gardens when dealing with high density and large blocks of flats, however desirable these might be. The upper flats cannot conveniently reach these gardens and too many small patches could detract from the appearance of the site and spoil the view from the upper windows. Where the ground is shared by so many, the layout and upkeep of the estate becomes communal and therefore vitally important to the life of people in the flats, and although the cost is great it is one thing which will make the life in flats more attractive. This matter has been mentioned in para. 41, but we should have welcomed more thought being given to this aspect and more emphasis laid on the importance both of design and maintenance. Great importance is rightly attached to playgrounds for younger and older children and rough ground where children can play more naturally and where they should be allowed to be untidy.

No solution has been found to the washing and drying of clothes although many schemes have been examined, and it

* H.M. Stationery Office, 1s. 6d. net.

would appear that the desire of the majority of tenants is to be able to do this within their own flats; it is suggested that more use should be made of the bathroom for this purpose. A proposal is made that small wash-rooms equipped with domestic washing machines, a wash-boiler, a sink with wringer, two drying cabinets and a table should be provided to serve from 15 to 20 flats, but a note of warning is given to over-enthusiasm for communal laundries. The Scandinavian countries seem to have accepted the communal laundry and treat it also as a social centre, but at the moment this is evidently not accepted in this country. We think, however, that more thought should be given to this extremely important subject as affecting life in flats more than in houses.

Refuse disposal has been dismissed in one paragraph amongst miscellaneous problems—yet it is one of the most vital problems in flat life. The report admits that the Garchey system provides the most satisfactory and labour-saving method yet devised, but the cost is greater than that of other methods, being £100 a flat or 1s. 5d. a week on the rent. We hope that a much more exhaustive examination will be made of both refuse disposal and collection, and that cost will not be the main consideration.

Sound insulation has been considered in the placing of sleeping rooms away from lifts and staircases, but the Sub-Committee consider that it was not within their province to examine the technical question. Evidence from local authorities shows that they are interested in the use of insulation if this could be done without unduly increasing the cost. We trust the research by the Department of Scientific and Industrial Research now being undertaken will not be unduly delayed, as this is of fundamental importance to the comfort of the flat dweller.

Storage and pram space has been mentioned. Mothers prefer to keep their prams in their own flats, and where lifts are available it is possible for these to be taken to the flats where space can be arranged for them. Where, however, lifts are not available then storage has to be found at ground level. It is this storage which is important and we should have appreciated a little more consideration being given to it. Would it not be possible to make this more attractive, even by taking space on the ground floor where it could be warm and dry and tastefully decorated?

We feel that this report deals with facts as they present themselves, and makes comparison between flats and houses. Many useful comments have been made, but we should like to have seen wider terms of reference and a greater vision shown in the report in the matter of the improvement of the amenities of the large block of flats.

NOTES & NEWS

IN MEMORIAM

THE death of the King, which took place suddenly at Sandringham early on Wednesday, leaves each one of us with a sense of personal loss. The dignity with which he overcame the painful events which preceded his accession, the personal example which he and the Queen set during the dark days of the war, and the fortitude shown in the difficult years following the end of hostilities, when he himself was a sick man, have earned his Majesty the deep affection and respect of each of his subjects. To the Queen we offer on behalf of the building industry loyal and deep sympathy, and also to Princess Elizabeth and the other members of the Royal family.

Until the time of his accession in 1937, the King was an Honorary Fellow of the R.I.B.A.

DISTINCTIONS AND DIFFERENCES

ON THE DOUBTFUL POSTULATE that all art is one (writes a correspondent) critics often compare contemporary movements in painting, sculpture, music and architecture without making any allowance for differences of character—i.e., painting, visual and two-dimensional; sculpture, visual and three-dimensional; music, aural and abstract; architecture, visual, three-dimensional and (generally) utilitarian. It is doubtful, indeed, whether architecture should be lumped in with these other arts, for it is not strictly comparable. Le Corbusier, for all his revolutionary labours, has little in common with the extremists in painting, sculpture and music, whose productions are unintelligible except to the initiated. The ignorant layman can walk about, live in and more or less understand the creations of Le Corbusier, however little he may like them; whereas the works of Picasso, Henry Moore and Zwog are beyond his comprehension. If any quality so lucid as that which gives "functional" architecture its distinction were to be found in their work they would be completely discredited. The fact that architecture is a structural art, allied to utility, and needs a client ready to put down hard cash if it is to be anything more than a paper design, puts it in a class apart from the other arts, whose practitioners can experiment to their hearts' content at no expense except to themselves. It ought not to be necessary to point out the obvious, but critics, please note!

ARCHITECTS AS EDITORS

OUR CONTEMPORARY *The Architects' Journal* has engaged the services for twelve months of four distinguished official architects to help the editors in producing their paper. These "guest editors" are "to give time and energy to guiding and inspiring the Journal's discussions about public architecture." No doubt they will do just that thing: the only question is whether they should. Of the four architects concerned—Mr. R. Gardner-Medwin, Mr. S. Johnson-Marshall, Mr. Robert Matthew, and Mr. Donald Gibson—two hold high positions in Government departments, one is architect to the London County Council and the fourth is architect to a midland city with a large building programme. As our contemporary says, "they might find it difficult to speak their minds freely." We agree; and we do not think their position is less invidious because there are four of them. It is one thing for a public servant to write articles of professional interest; it is quite another when he sets out to conduct public discussions as an "editor" of a technical paper. Perhaps the thaw in the political atmosphere induces private enterprise in public servants. These gentlemen, for whom we have considerable regard, are skating on thin ice.

PHOTOGRAPHS AT THE A.A.

THAT ARCHITECTURE AND PHOTOGRAPHY can be an ideal combination is shown in the annual exhibition of photographs by members of the Architectural Association now being held at 36, Bedford-square. The standard of the exhibition is, on the whole, very high, but it is unfortunate that for some reason it is not larger. Perhaps the most striking photograph there is one taken by Norman Westwood, entitled "The Harrow." As the visitor ascends the stairs to the members' room it is the first to be seen and is indeed a good choice for such a position. The exhibition includes a number of dramatic pictures which use to the full the contrast between light and shade. This is the type of subject in which one would expect architects to excel, and perhaps the best of these is "Basket Pattern," by E. A. Fleming Hewett, who has two other pictures in the exhibition, both of equal merit. Of the landscapes, R. Lovell Phillips' "Ventertal, Austrian Tyrol," is one of the best and Roderick Ham's "Le Pont D'Avignon" is a good photograph taken from a very high viewpoint. A group of children fishing is the subject of John Eastwick-Field's "Le Loir." This has been taken from an unusual angle and makes a delightful study.

There are other excellent photographs in the exhibition and the few that are not of such a high standard seem to have suffered from being over-enlarged. However, there is evidence here of some first-class architect-photographers, and although small in number, their pictures are good and well worth seeing. The exhibition closes on February 22 next.

R.I.B.A. LIBRARY GROUP

THE R.I.B.A. LIBRARY GROUP meeting on February 11 will be devoted to the work of George Edmund Street, R.A.

(1824-81), and will be introduced by Mr. H. S. Goodhart-Rendel, P-P.R.I.B.A. Drawings on display will include those of Carlisle and Edinburgh Cathedrals, the Guards' Chapel, and a number of churches including St. John the Divine, Kennington, and All Saints, Middlesbrough. Several of Street's sketch books will also be on view.

The following meeting of the Library Group, which will take place on March 10, will be devoted to the identifying of drawings in the possession of the R.I.B.A. Library.

VICTORIANA

MR. AND MRS. ARTHUR KENYON'S annual sherry party was held on Monday at 15, Adeline-place, W.C.1, and proved the usual cheerful show. The exhibition this year took the form of Collectors' Pieces, some belonging to the family, but the main portion got together by Miss Barbara Jones. Mostly consisting of Victoriana, there were some fascinating exhibits much appreciated by a large party of guests.

PLANNING LECTURES FOR ITALY

SPONSORED by the British Council, Mr. Anthony Minoprio, F. R. I. B. A., A.M.T.P.I., is now lecturing in Italy on "Recent Town Planning in Britain," and is holding discussions on town planning and its social implications with faculties of architecture, local authorities and other interested bodies.

ARCHITECT'S APPOINTMENT

MR. CLIFFORD HOLLIDAY, F.R.I.B.A., M.T.P.I., has been appointed Professor of Town and Country Planning at the University of Manchester. Since 1947 he has been chief architect and planner to the Stevenage Development Corporation.

STEVENAGE CHIEF ARCHITECT

APPLICATIONS are invited by March 3 next, for the post of chief architect and planner to the new town of Stevenage at a salary of £2,000 per annum. Details are advertised elsewhere in this issue.

EDINBURGH VACANCY

EDINBURGH CORPORATION are inviting applications for the appointment of Senior Depute City Architect, at a salary of approximately £1,750 a year. Qualifications required are the Associateship of the R.I.B.A., and administrative experience. Six copies of applications and relevant documents (with names of at least two referees) must be lodged with Mr. J. Storrar, Town Clerk, City Chambers, Edinburgh, not later than Monday next, February 11. The office of City Architect will become vacant in October, 1953.

CORBY APPOINTMENT

DR. D. R. HARPER, B.Arch.(L'pool), F.R.I.B.A., A.M.T.P.I., who has been appointed chief architect to Corby Development Corporation, will take up his appointment in the middle of February. Dr. Harper, who was born at Harrogate, spent some years as chief assistant in a London office before accepting an appointment as Lecturer in Architecture at the University of Cape Town, where he stayed for 11 years.

CRAWLEY CHIEF ARCHITECT

APPLICATIONS are invited by March 3 for the post of chief architect to the Crawley Development Corporation at a salary within the range £1,500 to £2,500 per annum superannuated. Details are advertised elsewhere in this issue.

L.C.C. PROMOTION

THE L.C.C. Town Planning Committee has recommended the promotion of Mr. G. S. Bowers, A.M.I.Struct.E., A.R.I.C.S., to be promoted a district surveyor, grade III.

PROFESSIONAL ANNOUNCEMENTS

MESSRS. RAMSEY, MURRAY AND WHITE AND BASIL WARD, as from April 5, are taking into partnership MR. PETER H. F. STILES, A.R.I.B.A., and MR. E. G. Y. ADAMS, A.R.I.B.A. The practice will be carried on as formerly under the name of Ramsey, Murray and White, at 32, Wigmore-st., London, W.1.

MR. A. J. HALE, L.R.I.B.A., has moved his office from 44, Broxholm-road, West Norwood, S.E.27, to 22, St. Stephen's House, Victoria Embankment, London, S.W.1. Tel.: Whitehall 6542.

MESSRS. F. C. THOMPSON, F.R.I.C.S. and E. W. LEANING, F.R.I.C.S., practising as John Leaning and Sons, chartered quantity surveyors, at 28, John-street, Bedford-row, London, W.C.1, have taken into partnership MESSRS. E. C. PRICE, A.R.I.C.S., H. LEANING, A.R.I.C.S., and H. SENIOR, A.R.I.C.S., all of whom have been senior assistants with the firm for many years. The title of the firm remains unchanged.

MESSRS. A. H. DAVIS AND PARTNER, chartered quantity surveyors, Newburn-chambers, 107, New Bridge-street, Newcastle-on-Tyne, have opened a branch office at 32A, Silver-street, Durham (Tel.: Durham 1623) and would be pleased to receive trade catalogues.

MESSRS. SNELL AND PARTNERS, quantity surveyors, beg to announce that Mr. B. V. Ball is no longer connected with the firm.

COMING EVENTS

MONDAY, FEBRUARY 11

R.I.B.A. (LIBRARY GROUP).—Subject: The Work of George Edmund Street, R.A. 66, Portland-place, W.1. 6 p.m.

R.I.C.S.—"Some Practical Aspects of New Town Development," by Mr. Bryan L. Richards, G.M., B.Sc., F.R.I.C.S. 12, Great George-street, S.W.1. 5.30 p.m.

BUILDING CENTRE.—Opening of small exhibition illustrating "Houses, 1952"—second appendix to the Housing Manual, 1949. Building Centre, Store-street, W.C.1. Continuing until February 23. 9.30 a.m. to 5 p.m. (Saturdays, 1 p.m.)

TUESDAY, FEBRUARY 12

R.I.B.A.—"Space Frames and Stressed Skin Construction," by Mr. F. J. Samuely, B.Sc., A.M.Inst.C.E., A.M.I.Struct.E. 66, Portland-place, W.1. 6 p.m.

FACULTY OF SURVEYORS OF ENGLAND AND FACULTY OF ARCHITECTS AND SURVEYORS (CENTRAL LONDON BRANCH).—"The Basic Principles of Valuation," by Mr. Ivor Murray. Shakespeare's Head, Gt. Marlborough-street, W.1. 7 p.m.

INCORPORATED INSTITUTE OF BRITISH DECORATORS.—"Eighteenth Century Bath," by Mr. J. E. Boddington, M.A. Building Centre, Store-street, W.C.1. 6.30 p.m.

LONDON BUILDERS' FOREMEN'S ASSOCIATION. "The Importance of Apprenticeship," by Mr. D. E. Woodbine Parish, president, L.M.B.A. 47, Bedford-square, W.C.1. 6.30 p.m.

ILLUMINATING ENGINEERING SOCIETY.—A paper "Specification and Testing of Fluorescent Lighting Fittings and Components," to be read by Messrs. W. R. Bloxsidge, A.M.I.E.E., G. Fahey, B.Sc., D.F.H., and D. T. Waigh, B.Sc., F.Inst.P. Royal Society of Arts, John Adam-street, W.C.2. 6 p.m.

WEDNESDAY, FEBRUARY 13

TIMBER DEVELOPMENT ASSOCIATION.—Showing of three new films on timber. G.B. Studios, 142, Wardour-street, W.1. 3 p.m.

L.M.B.A. (CENTRAL AREA NO. 1).—Luncheon to be followed by a general meeting. Derry and Tom's Restaurant, Kensington High-street, W.8. 1 p.m.

INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—A.G.M. Institution of Mechanical Engineers, Storey's Gate. 2.30 p.m. Annual dinner. Savoy Hotel, Strand. 7.15 p.m.

THURSDAY, FEBRUARY 14

A.A.—"Kodachromes of Italy," by Mr. Frederick MacManus, F.R.I.B.A. 34, Bedford-square, W.C.1. 8 p.m.

ENGINEERS' GUILD.—Debate on how nationalisation of industry affects the professional engineer. Caxton Hall, Westminster. 6 p.m.

"Just like the council to spoil the amenities with a point block!"

COMPETITION NEWS

HOUSING SCHEME AT GOLDEN-LANE, E.C.

ONE HUNDRED AND SEVENTY-EIGHT designs have been submitted by architects in a competition for the housing scheme which the Corporation of London proposes to erect on a site in Golden-lane, Finsbury, E.C., and the award of the assessor, Mr. Donald H. McMorran, F.R.I.B.A., will be announced on Wednesday, February 27.

The public exhibition of the designs will be opened by the Lord Mayor in Guildhall on March 10, and will be open on that day from 1 p.m. to 5 p.m., and from 10 a.m. to 5 p.m. until March 15.

Premiums will be paid of 1,000, 700, 500 and 300 guineas to the authors of the designs respectively placed first, second, third and fourth by the assessor.

The whole scheme is expected to cost approximately £1m., and is the Corporation's first large housing project since the war.

FROM "THE BUILDER" OF 1852

Saturday, February 7, 1852

OPENING OF THE VICTORIA TOWER, WESTMINSTER.—On Tuesday, February 3, Queen Victoria, for the first time, entered the New Palace of Westminster by way of the Victoria Tower. In the evening the line from Old Palace Yard to the Great Tower presented a very gay and imposing appearance, especially from the new entrance called St. Stephen's Porch, southward, the whole of the new buildings being brilliantly illuminated, including the large storied window at the end of Westminster Hall (or, more properly, which flanks St. Stephen's Porch), and the Great *Porte Cochère*, formed by the Victoria Tower, in each corner of which was a lofty standard gas light enclosed in a lantern. The lights outside the windows of the House of Lords were, of course, in use, converting the rich stained-glass windows into transparencies—a novel and happy idea which we have every reason to believe was first proposed in our pages.

RIBA STUDENTS' NIGHT

MR. ROBERT MATTHEW'S ADDRESS

A "full house" of students listened on Tuesday night to an address by Mr. Robert Matthew, C.B.E., A.R.I.B.A., and to a criticism of designs submitted for the R.I.B.A. Prizes and Studentships, by Mr. Donald H. McMorran, F.R.I.B.A. The President (Mr. Graham Henderson) was in the chair.

With every passing year the private client becomes more and more elusive (said MR. MATTHEW) and this New Year has been no exception; in fact, since the recent standstill on licences, many architects must be wondering if they will ever see a private client again. On the other hand, the volume of public work is immense, and public clients ever increase in number and in variety of form and type.

This is not to say, of course, that all public work is carried out, or will be carried out, by public offices. Indeed, the inquiry carried out for the R.I.B.A. in 1949 into the present and future of private architectural practice pin-pointed the fact that a considerable volume of public work is in the hands of private architects. But at that time—in 1949—it was estimated that roughly 40 per cent. of the whole profession was engaged in public offices, slightly over 50 per cent. in private practice, and the remainder in teaching and other activities.

WORK OF AN OFFICIAL DEPARTMENT

The architectural work of local authorities is too well known to mention in detail; I would just remind you that it can vary—depending on the degree to which the particular authority takes its visual problems seriously—from the design of lamp standards and litter baskets and street furniture to city redevelopment and redeployment on the widest scale, and with almost everything in between.

Now and again, I am surprised to find that some people expect that the controlling individuals, in the form of Ministers of State, committees, boards or councils, will be technical or professional experts in the particular field of activity concerned. This is not the way of British administration, and this fact, in the opinion of many both here and abroad, is of some importance to the successful working of our domestic democratic institutions. Members of these bodies are elected or nominated for a variety of reasons, but mainly for the common sense and understanding which enables them to represent the large numbers of people who—because of sheer numbers—cannot be individually articulate. The detailed knowledge required is expected from hired servants—the officials.

Such, however, is the complexity of this British way of official life, that it often happens that the public client becomes a multiple one, involving both laymen and officials. In the field of housing, for instance, this composite client, in my case, is represented by three distinct organisations. There is, first, the estate management organisation, the official department of the Council responsible for the day-to-day problems of management, whose accumulated knowledge of how people live and use their homes and gardens and other facilities, and of the behaviour of the buildings themselves in use, can be of the greatest value to the architect in designing new schemes.

Then, second, there is the Council itself, the elected members, acting through several committees — mainly Housing, Town Planning and Finance. The architect in charge of particular schemes will be expected to attend meetings of these committees to speak up for his plans, and you may be surprised at the first-hand knowledge that committee members have on all aspects of building, especially if they have been at it for some years.

It is unwise to talk down to your committee; on the other hand, many things that may appear to you to be obvious will need explaining; you would do well to develop the facility to put your ideas across, briefly, but clearly! Above all, be definite. Let indecision or lack of conviction appear and your cherished scheme may be rent in pieces, or, in committee language, "referred back for reconsideration." It is also useful to remember that the layman is firmly convinced—not without some reason—that experts were born to disagree. Some considerable tact and foresight is frequently required to ensure that all officials speak with one voice, even if they are not all of one mind—an object not so easy to achieve as it may sound. The architectural angle may be only one among many—some more acute and some more obtuse than others!

THE SHADOW OF FINANCE

It is a popular idea that public authorities tend to spend money recklessly: a few minutes at a finance committee meeting will soon dispel this pleasant idea rapidly. A recent building scheme included a tall block of flats which—*à la mode*—stood on pillars. The accompanying financial statement contained, perhaps unwisely, an item showing the exact cost of elevating the building. The chairman of the finance committee concerned asked the architect responsible for the design just why he had thought it necessary for the council to spend x pounds on hoisting the building off the ground, instead of allowing it to rest on the earth in the normal and less costly way. Well, of course, there were several good reasons why this should have been done; but, faced unexpectedly with the question, the architect took several obvious seconds to marshal his reply, and quite a considerable time longer to convince the committee he was right!

I must tell you that in most public work to-day the X-ray eye of the finance committee penetrates deeply both into estimates and accounts, and I would just like to say one word about estimating. Of all things that committees dislike—and here they may differ from the average private client, for they see a never-ending succession of schemes—probably they dislike most of all a constant excess of costs over estimates. Sometimes, it must be said, this is the fault of the clients themselves. A sudden request for a spot estimate is given which, once put on paper by the unwary architect, inevitably comes back later like a boomerang. No amount of qualifications inserted to safeguard the position can completely obliterate that fatal figure from the mind of the committee. One advantage of the large public office, where the quantity surveyor works continuously as part of the building team, is this—the art of accurate estimating can be elevated to a very high level. But beware of the "spot" figure! Much better to say frankly you don't know, and avoid that boomerang!

GOVERNMENT DEPARTMENTS

Thoughts on costs lead me, perhaps in not altogether a happy way, to the last of my hydra-headed clients—the Government Departments responsible for particular services. Theirs is a great responsibility; they must seek to maintain standards on a national basis and, to-day above all, must try to ensure that the national ration, in terms of labour and materials, meagre and insufficient as it is to satisfy all, is spread equitably where it is most needed.

It is in some ways an unenviable task, inevitably saying "No" on many occasions to enthusiastic architects; cutting, pruning, and sometimes completely eliminating. Plans may be changed time and again, in order to get marginal savings, and this is always a heartbreak to the designer. Some Departments, however, have taken a sensible line about this, and have set up development groups—such as Johnson-Marshall's notable team in the Ministry of Education—for the precise purpose of converting a negative attitude of regulation into a highly charged positive one of guidance. Remember that the central Department is no less part of your client than your immediate employer; if treated as such, it will come more than half way to help.

I would like now to leave the wide field of the public client and devote my few remaining minutes to one or two thoughts about the public architect's office. The chances are that the office will be larger—often very much larger—than a good-sized private office; and size, by itself, presents great problems to the creative mind. Instead of being introduced by a friend to a partner in the firm, perhaps over a glass of beer, for a chat about a job, you may be faced with Recruitment Board procedure, and the larger the office the more formal this approach will be.

You will, in any case, be sick of examinations, tests, orals and assessors, and you will resent this further ordeal before getting down to work. Furthermore, you will get letters written in rather formal terms. Perhaps they will be signed, not even by the Chief Architect, but by someone called the Establishment Officer. Don't be put off by these formalities—it is impossible to run a large organisation equitably and well without something of this kind, especially

where competition for entry is keen, as it is in all the well-known public offices to-day.

INDIVIDUAL RESPONSIBILITY

I would like, in finishing my address, to touch on the question of individual responsibility for design. The traditional idea of a Public Department is an anonymous junior at the bottom, sending his work up through a succession of higher and higher architects (their grades are instantly recognisable by the size and pattern of their carpets) until it reaches the Olympian desk of the Chief. His remoteness is such that he is never visible to the human eye—his very name is uncertain, and his history is even more obscure. After a long period of agonising suspense, the drawings return through the same channels to the unfortunate junior, who is left to do what he can with the mangled remains. This charming cap probably fitted quite a number of official heads in the not too distant past—and still may fit a few to-day. I can, however, speak from my own experience in the last few years, when I have had the opportunity to guide the development of two very different architectural and planning offices, in central and local Government; on both occasions I took some trouble to find out what was happening elsewhere.

To-day, up and down the country, there are many offices working on the group method, under first-class leaders, where the most junior member becomes part of a team, seeing the job or jobs through from start to finish. I believe that it is through this method—which can be worked out in detail in many ways—that a sense of responsibility can be immediately given, and the frustrations often thought to be inherent in the large public office may be avoided.

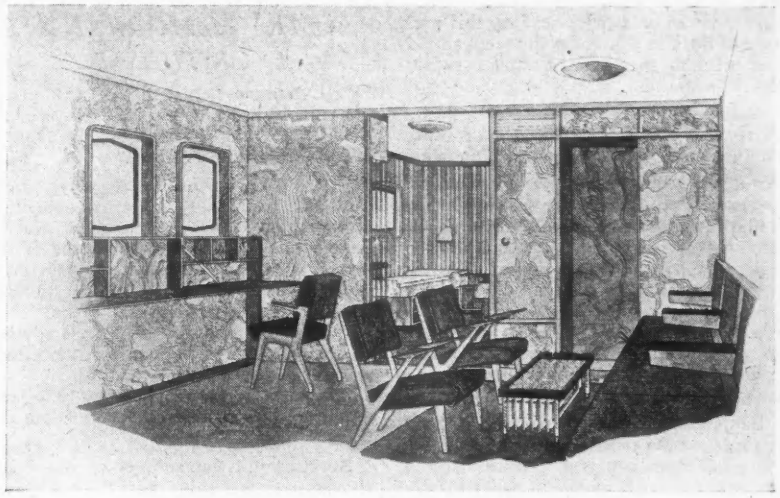
ADVANTAGES OF PUBLIC SERVICE

I have spoken of the obvious disadvantages of a large office. Let me mention some things that may, on the other hand, be advantageous. First, the opportunity to meet women and men from many schools, possibly other countries, and consequently a wide range of thought, outlook and experience.

Second, the possibility of working in a team, not only with architects, engineers and surveyors, but with members of other Departments directly representing education, housing and other social services. This aspect of the "client-architect" relationship is, I think, one of the most valuable characteristics of the public office, and one that I am certain will develop to a very great degree in future. I have, unfortunately, not the time to expand this idea, except to say that not the least of the advantages of this very close and continuing relation is the avoidance of architectural isolation—a warning well given by Professor Budden in his address to students in 1948.

Third is the opportunity for development and research in relation to a continuing programme of work which even the severest of austerity conditions cannot completely shatter, and again. I can only

(*Continued on page* 214).



The winning design: Perspective view of a sitting-room.

COMPETITION

DESIGN FOR A SHIP'S CABIN

THE first prize of £250 in the ship's cabin design competition organised by the Council of Industrial Design Scottish Committee, was awarded to Mr. Ian M. T. Samuel, of Camp View, Newtongrange, Midlothian, a 22-year-old architectural student now in his fourth year at Edinburgh College of Art.

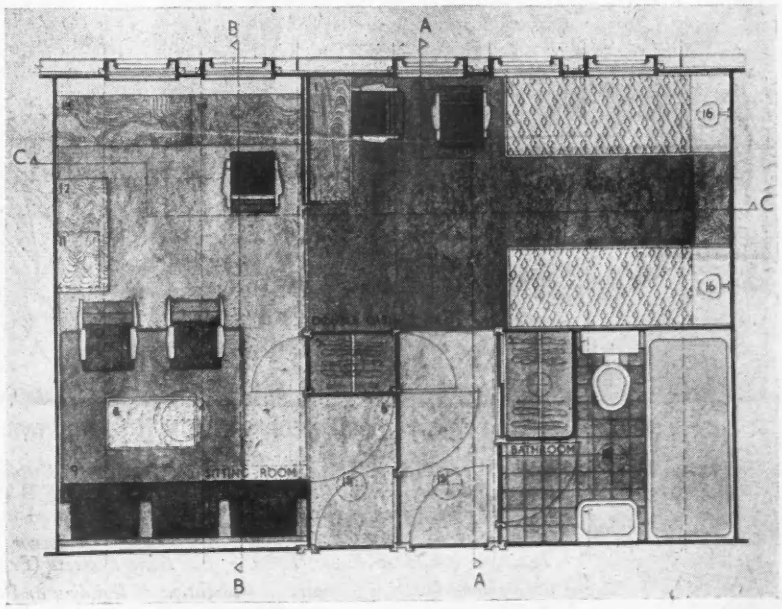
£100 has been awarded to the entry from Professor R. D. Russell and Associates, of the Royal College of Art, London, for Messrs. Wylie and Lochhead, Ltd., Glasgow.

High commendations, carrying an award of £25 each, were given by the judges to designs from Mr. L. Eckersall, of Ealing, London; Mr. A. Jackson, East Kilbride; Mr. R. L. Robertson, Kirkcaldy; and the joint entry of Ake Leimalm and Claes V. Feder, Gothenburg, Sweden.

Competitors were asked to submit complete arrangements for a suite of cabins within the dimensions of 19 ft. 2 in. by 13 ft. 10 in.

The judging panel included Mr. E. C. Leach, F.R.I.B.A.; Mr. J. R. M. Poole, A.R.I.B.A., A.M.T.P.I., and Mr. John Robson, M.B.E., B.Sc., M.I.N.A., M.I.Mar.E. In their report the judges say they were impressed by the high standard of most entries in the 65 submitted. Some of the schemes not awarded prizes might with advantage be brought to the notice of the shipping and shipbuilding industries.

The following key relates to the plan below:—(1) Dressing table finished in polished bubinga; (2) occasional chairs of Australian pearwood; (3) bedside cabinet finished in polished bubinga; (4) concealed ceiling lighting in spun brass; (5) fitted wardrobes with automatic lighting; (6) convertible porch which becomes part of wardrobe when not required as access; (7) bed-settee (bottom left) with folding arms and pull-out seat; (8) occasional table in grey sycamore; (9) loose rug; (10) easy chairs of Australian pearwood; (11) concealed wash-hand basin; (12) folding table in grey sycamore which becomes dressing table for subsidiary cabin; (13) folding front of cocktail cabinet; (14) folding writing table with bed under; (15) small flush ceiling lights in spun brass; (16) bed lights of translucent glass with engraved pattern; and (17) sliding door.



Plan of the winning design. (*For key see above*).

just mention as a brief heading this great field of work in which lies the seed, already just breaking the husk, of a major revolution in technique ; and

Fourth (by no means least !), the availability of a good administrative staff to take the burden of non-technical work, now the plague and despair of the private office.

My last word will be a warning, which I think is also a sign of hope for architecture in this country. The standard of design ability required in public offices has in the last ten years gone up like a rocket. One has only to compare similar work, such as schools, in public offices in America—so reminiscent of pre-war days in this country—to realise just how much advance has been made here.

The public service has no great material rewards to offer ; but building is becoming more and more a part of that service. If you enter it, and many of you will, you may find satisfaction in taking part, even a vital part, in this exciting operation.

MR. McMORRAN'S CRITICISM

THE annual criticism of the prizes and studentships was delivered at the R.I.B.A. on Tuesday by Mr. Donald H. McMorran, F.R.I.B.A.

There were 317 entries for these prizes said Mr. McMorran, many representing considerable effort, and a great deal of patient and valuable work. Some of the prizes were not awarded. It had been suggested that that discouraged students from entering in future years. Any who felt like that would be well advised to change their profession. Architecture was not for the fainthearted.

The speaker then dealt with 13 prizes, and from his remarks we take some extracts of general interest.

Speaking on the subject of *the Pugin Studentship*, he said that the care and maintenance of our mediæval buildings would become an increasing problem, with which too few of us were well qualified to deal. Pugin medallists, when planning their tours of study, might pay attention to this important side of architectural practice.

A TITE COMPROMISE

The Tite Prize. This junior prize was to encourage the study of Italian architecture, said Mr. McMorran. " Perhaps I ought to explain for the benefit of any strangers that expert opinion is divided on the best means of making the award. Until recently, students were required to compete in designing a small building in the high classical tradition. Then it was proposed to admit designs in any style (or even no style at all) ; and we have now compromised by holding a classical competition and one of the other kind in alternate years. This judgment of Solomon has, so far, drawn no maternal shriek from either side. This year happens to be a classical one. . . . To prevent misunderstanding, it must be recorded that

SOME PERSONALITIES AT THE NATIONAL FEDERATION ANNUAL DINNER AT THE DORCHESTER. As seen by Sallon.

Top row: Alan Pitt Robbins (News Editor, " The Times "), Lord Terrington, Stephen Hudson (President, N.F.B.T.E.), The Rt. Hon. David Eccles (Minister of Works), J. Ian Robertson (Sen. Vice-Pres., N.F.B.T.E.), Sir George Burt (President, Federation of Civil Engineering Contractors), E. W. Garrett (Jun. Vice-Pres., N.F.B.T.E.).

Centre row: Wilfred Horsfall (Jun. Vice-Pres., N.F.B.T.E.), George Grosvenor (Jun. Vice-Pres., N.F.B.T.E.), Robert H. Matthew (Chief Architect, L.C.C.), Sir Luke Fawcett (President, N.F.B.T.O.).

Bottom row : Edgard Frankignoul (Pres., International Federation of Building and Public Works), Harvey G. Frost (Jun. Vice-Pres., N.F.B.T.E.), L. E. Henderson (Chm., Quantity Surveyors Committee, R.I.C.S.), Sir Percy Mills, Sydney Tatchell (Chm., Joint Contracts Tribunal) and Sir Richard Coppock (Gen. Sec., N.F.B.T.O.).

the general level of scholarship disclosed by this competition leaves a great deal to be desired, and seems to confirm the wisdom and foresight of the late Sir William Tite.

The Grissell Medal. On this Mr. McMorran said: "This is a practical competition, and the absence of an award is unsatisfactory. The work of the present-day student too often shows failure on four sides of the architect's business; failure to visualise the life which is to go on in the building, and to plan simply for it; failure to choose the best and simplest materials and forms of construction; failure to achieve a consistent and appropriate architectural expression; and failure to convey full and precise instructions, as required by the quantity surveyor and the building contractor."

The Soane Medallion. Summing up this competition, Mr. McMorran said: "These Soane competitors have generally made their own difficulties by being too anxious to avoid the obvious and straightforward. If you begin with a simple, intelligible working plan (which *can* be found inside twelve hours if you don't start with preconceived ideas) you can go on to furnish it to your taste at leisure. But if you start with a disorderly plan you cannot save it by forcing it into a strait jacket, nor by trying to pass it off as the latest thing in what I may call the 'picturesque functional.'

THE AGE OF INELEGANCE

"It is now my duty, on behalf of the Juries, to congratulate the winners and to commiserate with those who did not succeed on this occasion. It *is* better to have tried and failed—and to learn from failure and try again—than never to have tried at all."

Mr. McMorran continued: "I think what strikes one most about these designs is the want of a sense of permanence and quality in building and of continuity in architecture. No doubt there are various technical reasons for this impression—one is the misapplication of so-called 'free' planning, and another is sheer poverty of expression.

"The conception of space as flowing about attenuated or transparent structures is attractive and stimulating, and has been much advertised for the last twenty-five years or more; but is it really so new as all that? Certainly it ought not be used as an excuse for thoughtless and extravagant planning, or shoddy, eccentric, construction. It should not be confused with a quite different idea—that of impermanence in the structures themselves.

"Perhaps our obsession with these notions springs from not having enough confidence in the future of ourselves and our designs. It certainly seems to encourage that disrespect for the past which Mr. Raymond Mortimer has called 'one of the nastiest things about the age of inelegance in which we live.'

"This can all be summed up as lack of discipline. And, if we are to judge by this year's work, surely none of us, teachers or students—and most of us *are* students—can feel very happy about the way we are going."

CORRESPONDENCE

DELAY IN SETTLING FINAL ACCOUNTS

To the Editor of *The Builder*

SIR,—"We must be realistic under modern conditions," writes Mr. W. Gordon Lilly. Precisely: which is probably the reason for a £2,500 retainer on a £50,000 job.

HOWARD FROBISHER.

8, Fair View-crescent,
Bacup, Lancs.

To the Editor of *The Builder*

SIR,—I very much agree with the views expressed by Mr. W. Gordon Lilly in his letter which was published in your issue of January 25, and I congratulate him for stating courageously what, in my opinion, also, are some of the basic reasons which are retarding the increase of productivity in this industry.

A "Period of Final Measurement" is stated in most forms of building contract, and, whilst all parties invariably conform with the remaining clauses of the latter to the best of their ability, there is a remarkable apathy on the part of many architects to ensure that quantity surveyors supply the contractors with a copy of the priced bills of variations within the prescribed time. There is little action, if any, that may be taken by contractors at this stage to expedite matters, other than frequent requests in writing, which usually prove to be of no avail. The usual reply is that "owing to the large amount of work necessary in their preparation, the accounts will not be ready for some time."

This, of course, could be completely avoided if quantity surveyors would meet the contractors' surveyors prior to the preparation of interim certificates in order to agree the dimensions and rates for the variation accounts as the work proceeds. An efficient contractor is obliged to do this as a matter of course in order to prepare accurate interim certificate applications, so that payment may be ensured of the proper moneys due, and that these may be progressively reconciled with the costs to date. In my opinion, it is a complete waste of time and an unnecessary expense for the contractor to have to do the majority of this work again with the quantity surveyor, either in the closing weeks or after the completion of the contract.

I consider that Government Departments and local authorities are the worst offenders in this respect. My own company completed a job over three years ago and a period of final measurement of three months was stated in the contract, but no draft final accounts have been received yet. This, of course, completely illustrates the unfairness of the retention of moneys long after the period stated in the contract.

I appreciate that many architects and quantity surveyors complain that contracts frequently produce so many claims that it is not possible to deal with them all during the progress of the works, and that delay in the settlement of the accounts is inevitable. I also appreciate, of course, that we are living in times of great difficulty and that the risk of shortages of labour and materials is considerable, but, nevertheless, I consider that many delays which are the foundation of claims would be avoided if architects would endeavour to keep their variations to a minimum by keeping these facts more in mind when preparing their specifications.

I feel that no retention moneys should be deducted at all, for contractors normally execute one month's work before receiving interim payments and employers are thereby automatically holding that value in hand until the completion of the contract. This method should generally reduce building costs, for I venture to suggest that most contractors have to include a certain percentage in their overheads to cover bank charges on overdrafts, which are far greater than they should be owing to large sums of money retained in various contracts.

In conclusion, I should like to refer you to the R.I.B.A. Form of Contract, July, 1939 (Revised 1950). Part of Clause 9 states that "The contractor shall be supplied with a copy of the priced bills of variation not later than the end of the period of final measurement stated in the appendix to these conditions, and before the date of the architect's certificate in respect of such variations." Clauses 12 and 24 (*f*) require the contractor to make good defects at his own cost which appear during the defects liability period within a reasonable time after the architect's written instructions, and upon expiration of this period or upon completion of making good defects, whichever is the later, the architect shall issue his final certificate.

If the contractor is not supplied with a copy of the priced bills of variations within the stated time, surely he has every right to delay the making good of defects until the former are in his possession?

A. G. BYFIELD,
Director, R. B. Burden, Ltd.
Staines-road, Hounslow.

EMPLOYMENT OF QUANTITY SURVEYORS AND MEMBERSHIP OF THE R.I.C.S.

To the Editor of *The Builder*

SIR,—Your correspondent, Mr. Turner, complains of the apparent disinterest in his profession in the subject of employment in builders' offices, or not, of members of the Royal Institution of Chartered Surveyors. I suggest that many many members, like myself, are content to leave matters as they are, and therefore have not wasted valuable time writing on the subject.

The whole base on which the quantity surveyor must work, if the profession is to retain its present high reputation, is the absolute freedom from bias, and, even more, from the appearance of bias, in all his work. Hence no quantity surveyor is happy to see fellow-members in salaried appointments under clients, whether they be Government Departments, local authorities or substantial property-owning companies. Nevertheless, it is a fact that these bodies have at some time in the past offered attractions sufficient to obtain quantity surveyors on their staffs, and the R.I.C.S. has not thought fit to frown on the practice hard enough to prevent or stop it. That is no reason why the malpractice should be extended even further to the side of the contract on which undoubtedly the survival of the employer will, to a very large extent, be dependent on the work of the surveyor. This is the big difference between the two types of salaried employment: in one case the employer does not rely on his building expenditure for the survival or profit of the

corporation or company, whereas in a building firm he does, and therefore he relies on his surveyor, and the appearance of bias would be overwhelming.

Everyone, whether he be building owner or builder, can obtain the services of a chartered quantity surveyor just as easily, and I would therefore ask your correspondent why he would wish for facilities for the employment of chartered quantity surveyors under salary by builders and contractors?

A. P. HOLDSWORTH [F.R.I.C.S.]
281, Glossop-road,
Sheffield 10.

CHARTERED SURVEYORS AND CONTRACTORS' OFFICES

To the Editor of *The Builder*

SIR,—With reference to the letter in your last issue from Mr. J. R. Turner concerning the employment of professionally trained quantity surveyors by building contractors, I think he will find that his first conclusion is correct—that is, that chartered quantity surveyors are not interested in the question.

When working independently a man can maintain a completely unbiased attitude to any contractual question, but when working for a contractor as an employee he cannot help but be influenced, however slightly, by his employer's interests. That is, of course, the basic reason for the Institution's decision which has been stated in their Journal on various occasions.

The answer is that if a contractor can offer the chartered surveyor more advantageous terms of employment than a professional firm, then the surveyor should accept them and forego the Institution membership. I have no doubt that information on all matters affecting the profession is disseminated by the contractors' organisations as it is by the Institution to its own members.

I certainly think that a case could be made out for the Institution to allow any member joining a contractor's staff to retain his membership, providing that he discontinued the use of his designatory letters, but I personally cannot be bothered to do it and imagine that other quantity surveyors feel as I do. Possibly when Mr. Turner is a little older he will become less worried about this matter which is not really a vital one.

L. H. LOCKLEY [A.R.I.C.S.]
179, Lower Addiscombe-road,
Croydon, Surrey.

COST OF LOCAL AUTHORITIES' ARCHITECTURAL DEPARTMENTS

To the Editor of *The Builder*

SIR,—Both Mr. Louis de Soissons and Mr. Douglas Smith are quite correct in suggesting in your last issue that I had overlooked the fact that a lot of the work of a local authority will be Housing, so giving a fee much below the normal 6 per cent. I had; and from the information given in their letters it seems likely that the private architect will generally cost less than the public architectural department. This, of course, is a good thing, and does give the answer to the doubts which prompted me to write my earlier letter.

In passing, I would not dare to let Mr. de Soissons see any details of my calculations. I have distinct recollections of being quite frightened of him when he examined me orally many years ago!

GEOFFREY L. PRICE.
26, St. Mary's-place,
Newcastle-upon-Tyne 1.

STEEL FOR THE JOB

To the Editor of *The Builder*

SIR,—February 4 is upon us, and the paper wastage connected with it has been in full swing for some time. Occasionally, a steel authorisation is obtained and used easily, but the list of events given below is by no means imaginary or unusual.

1. Architect 'phones Ministry requesting authorisation.
2. Ministry 'phones architect asking for which period it should be issued.
3. Architect writes to steel fabricator asking when he can supply.
4. Fabricator 'phones Supplier and Supplier says Period 1.
5. Fabricator writes or 'phones Architect saying Period 1.
6. Architect fills form and sends it to Ministry for Period 1.
7. Ministry issues form as requested.
8. Architect sends form to Building Contractor.
9. Building Contractor sends it to Fabricator (his sub-contractor).
10. Fabricator sends it to Supplier.
11. Supplier has meanwhile been instructed by his Federation to allocate the rollings reserved for this particular job elsewhere, and he replies to Fabricator saying, sorry, it must be Period 2.
12. Fabricator sends form back to Contractor asking for re-issue for Period 2.
13. Contractor to Architect ditto
14. Architect to Ministry ditto
15. Ministry to Architect saying, sorry, our allocation for that Period is used up, but plenty is available in Period 1, because various other people have also returned their allocations.
16. Architect to Ministry, saying Period 1 is useless.
17. Ministry to Architect issuing Authorisation altered and stamped.
18. Architect to Contractor.
19. Contractor to Fabricator.
20. Fabricator to Supplier.
21–30. Repeat as 11–20 (but substituting Period 3) since the time lag during the correspondence has used up the whole of Period 2!

By this time, the people concerned are ready to commit suicide but, because they consider it unavoidable in the interests of steel economy, they generally put up with it. But in the end, exactly the same amount of steel is used, and during the whole process, the only person really interested in the number of the period which appears on the form is the supplier. Because the people who *make* steel have quarterly instructions from their Federation about rollings, this fantastic wastage of time, effort, stamps, 'phone calls and paper is allowed to take place.

It seems that a simple administrative instruction is necessary by the Minister concerned, and it is high time that he gave it. Steel authorisations for building work should be issued for the job without any reference to any quarterly period whatsoever. When the form reaches the supplier, he should fill in the period and inform his Federation, and the Government Department concerned (and that Department's future authorisations for further jobs should be based on whether or not their allocations for the previous quarter were exceeded. If this were done, the "events" would be limited to items 1, 7, 8, 9, 10.

Here and now, I challenge the Minister concerned to either acknowledge or deny that this proposed simplification should and can take place.

E. B. REDFERN
[A.R.I.B.A., A.M.T.P.I.]
"Trenton,"
Matford-road, Exeter.

PURCHASE TAX AND BILLS OF QUANTITIES

To the Editor of *The Builder*

SIR,—The letter from Mr. L. H. Dark in your issue of January 11, is surely based on a misapprehension. Whilst it may be illegal for a supplier to allow discount or profit on purchase tax, there is nothing illegal in allowing the contractor a reasonable return on his capital outlay.

Let us first consider items which are not P.C. sums but which are subject to purchase tax. In such cases the contractor obtains his own quotations and adds whatever profit he deems appropriate. He naturally takes into consideration the purchase tax in determining the profit that he requires. Nor, if he is prudent, does he disregard the fact that the purchase tax is net. There is nothing illegal in this.

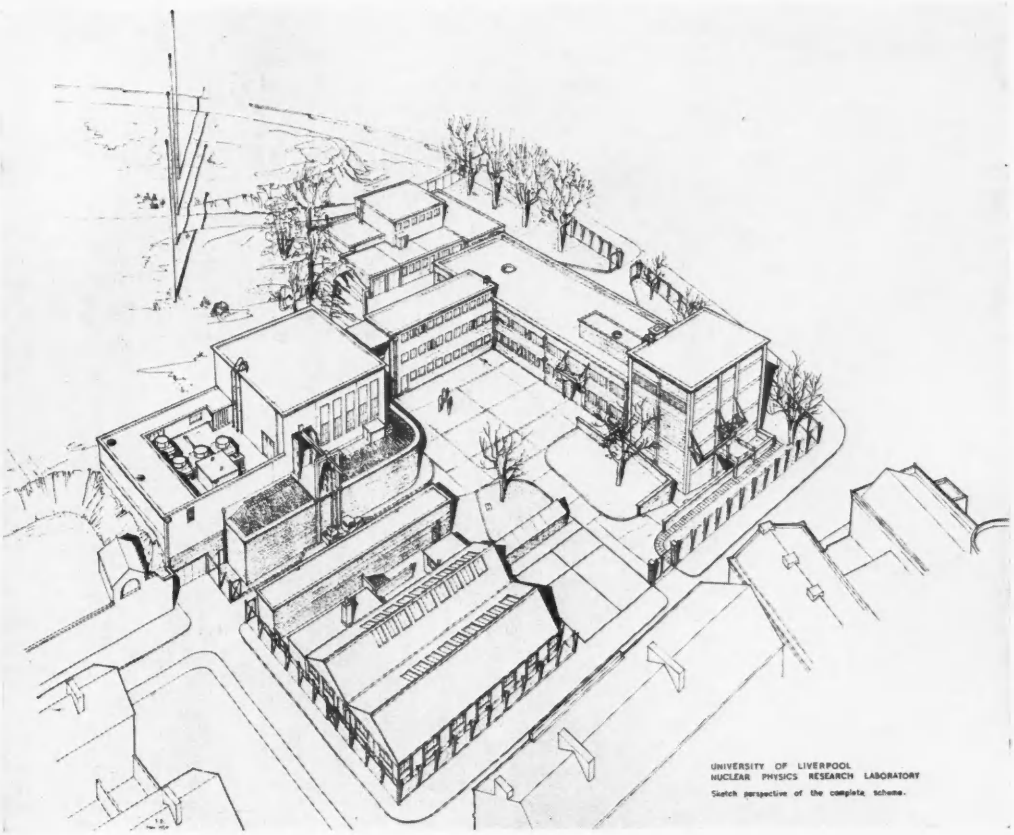
Purchase tax is part of the cost of the material, and where P.C. sums are involved such cost, including tax, must be adjusted against the appropriate P.C. sum. It may be illegal for the supplier to allow discount on the tax, but it is not illegal for the quantity surveyor to adjust the P.C. sum in accordance with the terms of the contract; in fact it would be illegal to do otherwise.

Surely, every quantity surveyor has experienced instances where the supplier has not allowed the appropriate discount from his invoice in respect of P.C. items. In such case it is incumbent on the surveyor to make the appropriate allowance in the final account. The same rule must apply with regard to purchase tax; the appropriate discount or profit must be allowed to the contractor even though it does not appear on the supplier's invoice.

With regard to the second portion of your correspondent's letter, relative to dayworks; unless the form of contract stipulates otherwise, the contractor is entitled to the actual cost of the work at current rates, plus the appropriate profit. This is merely a matter of equity. Should there be a considerable increase in cost of labour or materials during the progress of a contract, it might prove to be a considerable saving to the client, at the contractor's expense, to have additional works carried out on a daywork basis, rather than by measurement, thus taking undue advantage of the lower basic rates. In addition to his technical functions, every quantity surveyor should be guided by considerations of fairness and equity.

INCORPORATED SURVEYOR.

Februa



Sketch perspective of the complete scheme.

NUCLEAR PHYSICS RESEARCH LABORATORY, LIVERPOOL

WILLIAM HOLFORD, MA, FRIBA, MTPI, ARCHITECT

W. M. SHENNAN, LRIBA, SUPERVISING ARCHITECT

THE development of research in nuclear physics at Liverpool University indicated that investigations should be continued at much higher energies, and this resulted in the design of a new accelerator capable of producing particles of 400 million volt energy. This decision demanded that a suitable laboratory be constructed to house the new equipment and the provision of adequate facilities for the research workers engaged on the project. In addition it was considered desirable to re-house the existing 37-in. cyclotron on the new site. This machine, which was built in 1937 and is at present being used in the old physics laboratory, will be moved to its new site early in March.

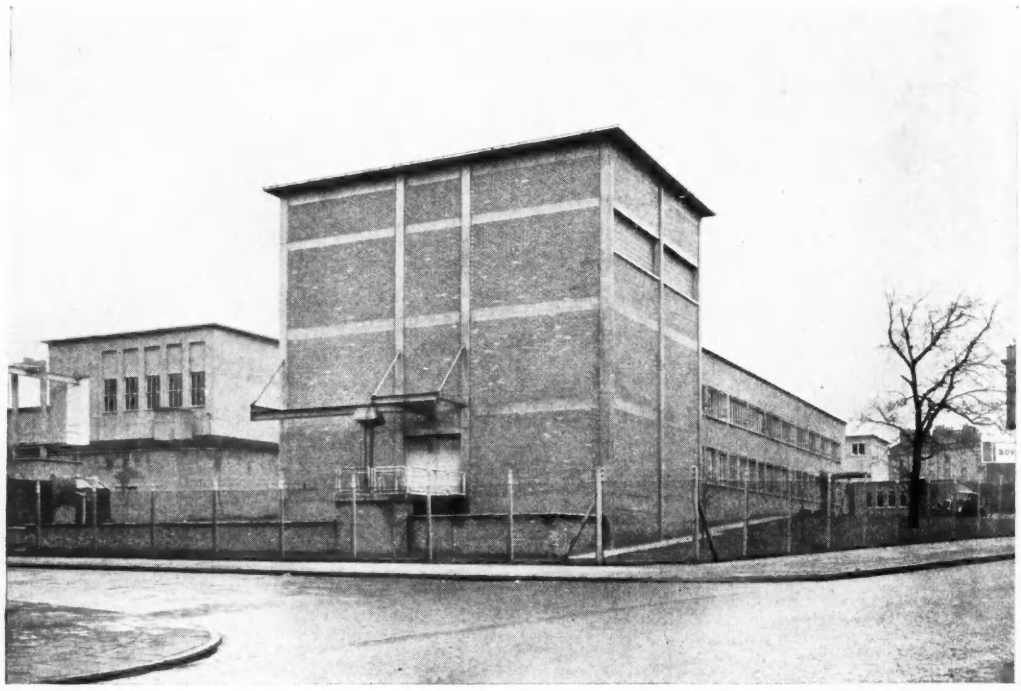
The 156-in. synchro-cyclotron, in addition to providing a number of technical problems in design and construction, also emphasised the importance of screening from the radiations produced by the beam of high energy particles ; 400 million volt protons in collision with atomic nuclei are capable of producing penetrating neutrons. Thick concrete shielding is required to absorb these neutrons.

It was important that the concrete used should be homogeneous and that apertures in walls be avoided. This has been overcome in the design of the structure by including expansion joints in the 5½ ft. roof (maximum thickness) and the 6 ft. walls. Additional external screening has been obtained by utilising finely pulverised sandstone excavated from the site of the cyclotron room basement. In addition to the two cyclotrons a 1.2 million volt high tension set has been commissioned and is being used for the investigation of nuclear phenomena at various energies up to the maximum output of the set.

DESCRIPTION OF BUILDINGS

Laboratory Block.—This building has a basement, ground floor, first floor and high tension section. The framework is of structural steel with floors and roofs of precast concrete beams. The walls are of cavity brickwork with specially selected facing bricks. Metal standard windows with armour plate glass have been fitted throughout with the exception of the H.T. block where natural light is gained by glass brick panels. As it was essential to protect equipment from the effects of dampness, the basement was tanked in asphalt.

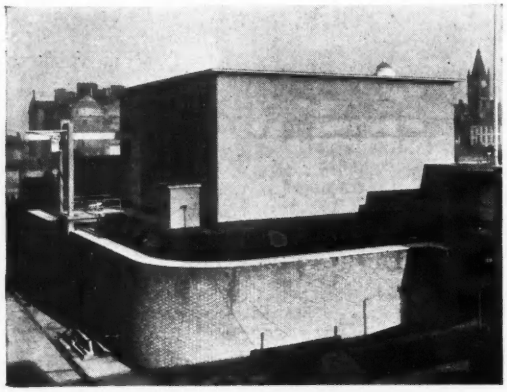
Basement.—Here are located the boiler-house, ventilation plant room, stores and H.T. experimental room. *Ground floor.*—This comprises laboratories,



An exterior view of the high tension room.

photographic dark-room, machine shop, 156-in. cyclotron control room, radium store, H.T. laboratory and control room, welding room, lavatories. *First floor.*—Laboratories, offices, drawing office, library, common rooms, photographic dark-room and lavatories are provided on this floor. *Second floor.*—This is in the connecting wing only where part of it is used to provide access to the cyclotron block by means of a covered-in bridge. All services are taken from the research block to the cyclotron over this bridge. The major part of the second floor is allocated for stores. Facilities are available for easy hoisting of equipment from ground level outside.

High Tension Section.—The high tension equipment is housed in a tower at the end of the laboratory block, where it rises 21 ft. above the roof level of the laboratories. This part of the building also consists of a steel framework with brick walls, except for the wall adjoining the main laboratory block. This was made of concrete 12 in. thick using barytes aggregate to provide a wall of great density which stops radiations from the H.T. set penetrating into the laboratories.



A view of the 156-in. cyclotron building showing the brick retaining wall and sandstone packing.

The main entrance into the high tension room consists of a concrete viewing chamber with lead-lined doors which have electrical interlocks. Should a door be opened while the equipment is being operated the power will be cut off. From the viewing chamber, which is equipped with a panel of 7 mm. super protex glass (three sheets) to protect personnel from X-rays, the engineer is able to view the equipment for satisfactory running. Instruments remotely located on top of the set may be read by the use of a telescope.

156-in. Cyclotron.—This building consists of a cyclotron room with two working levels, one at adjacent road level and the other 8 ft. below it. A subsidiary pit for erecting the magnet is located 15 ft. below road level. Adjoining the cyclotron room is a large anteroom for experimental work. Above these two sections are the Auxiliary Equipment room, a motor house for lifting a 30-ton door, and a ventilation plant room which is connected to the A.E. room by a covered way. A bridge, which carries in addition to the normal services all cables for the control of the main cyclotron, joins this building to the laboratory block.

The Sub-Station.—Constructed of brickwork, this building is 90 ft. long, 13 ft. wide and 12 ft. high, and houses four transformers and H.T. and L.T. switch gear. Cables from this sub-station are fed to the auxiliary equipment room in the main cyclotron building through an underground tunnel 5½ ft. high by 4 ft. wide, thence through a concrete duct built against the wall of the cyclotron building. A separate supply is also run to the 37-in. cyclotron laboratory.

The 37-in. cyclotron building.—This is a smaller

version of the 156-in. building; it has its own control room whereas the big machine is controlled from the main laboratory block. Personnel are protected from radiations by concrete walls 3 ft. thick.

PROTECTIVE WALLING

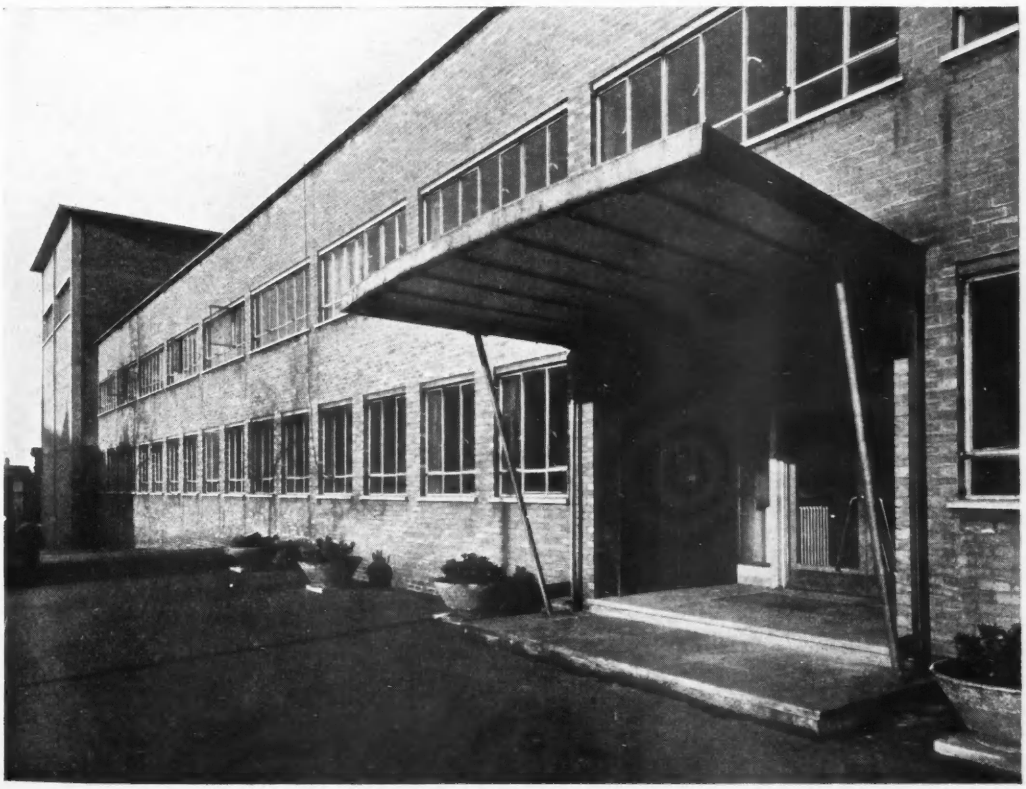
As a large proportion of the 156-in. cyclotron room is below ground level, it was necessary to excavate to a maximum depth of 30 ft. into sandstone which involved removing well over 10,000 tons of rock. The whole of the basement was tanked with asphalt and the concrete oversite built to a thickness of 2 ft. From this the walls were constructed, the majority being 6 ft. thick mass concrete, although the wall dividing the cyclotron room from the anteroom is 12 ft. thick. The roof over the room is heavily reinforced concrete 5½ ft. in thickness. The upper part of this roof, *i.e.*, the floor of the auxiliary equipment room, has 18 in. deep trenches to take water and electric supplies associated with the cyclotron. As a further protection from radiation the 6 ft. thick external walls have an additional thickness of pulverised sandstone, which was excavated from the magnet pit and extends 10 ft. beyond the outside face of the cyclotron wall. This packing, which rises to the height of the ceiling over the cyclotron room (approximately 21 ft. from ground level) is retained by a large brick wall on average 5 ft. thick. Thus, at the maximum, there is 21 ft. of protective concrete, pulverised sandstone and brickwork round two sides of the chamber. The third side facing the adjoining anteroom has a wall of mass concrete 12 ft. thick. The fourth side has been built into the solid rock.

The floor of the lower working level in the cyclotron room was constructed in two stages when the oversite concrete was laid, followed by a further 6 in. to provide ducts for cables and other services. The cyclotron room itself has two working levels and a magnet pit in which the 156-in. cyclotron rests. To provide a working platform at the same level as the anteroom, a floor was constructed of steel columns and beams supporting open grid steel flooring. This floor is designed to take a maximum load of 70 tons on any set of four supporting columns. It may also be readily dismantled for the removal of existing equipment from the lower floor level.

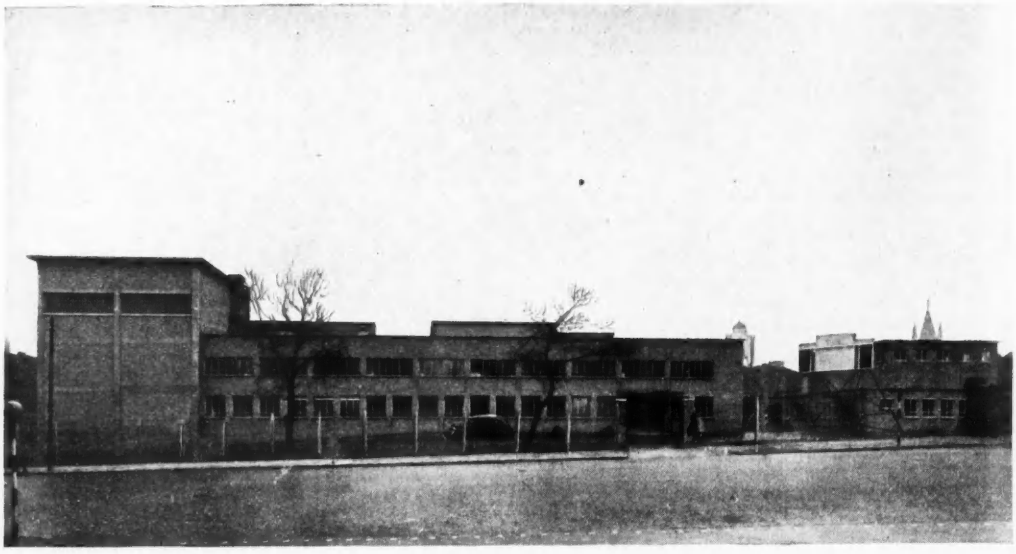
For the erection of the magnet, which has a total weight of over 1,700 tons, a 30-ton overhead crane was installed supported by a continuous R.C. beam which forms an integral part of the concrete walls. Having erected the magnet plates and discs, the heaviest of which has a maximum weight of 30 tons, the crabs of the 30-ton crane were replaced with crabs capable of lifting five tons. A supplementary 2-ton capacity crane is provided for working between the front of the cyclotron and the 12 ft. concrete wall separating it from the anteroom.

There are two methods of entry into the cyclotron room from the anteroom. For the removal of plant and equipment an opening has been left in the thick concrete wall which is approximately 23 ft. wide by 12½ ft. high. Prior to the commencement of experimental work the cyclotron side of this opening is sealed with specially constructed concrete blocks manufactured to a high degree of accuracy in both density and size so that they can be stacked on each other to build a removable screen wall for this opening. Each of these blocks weighs one and a half tons.

It is interesting to note that the main aggregate



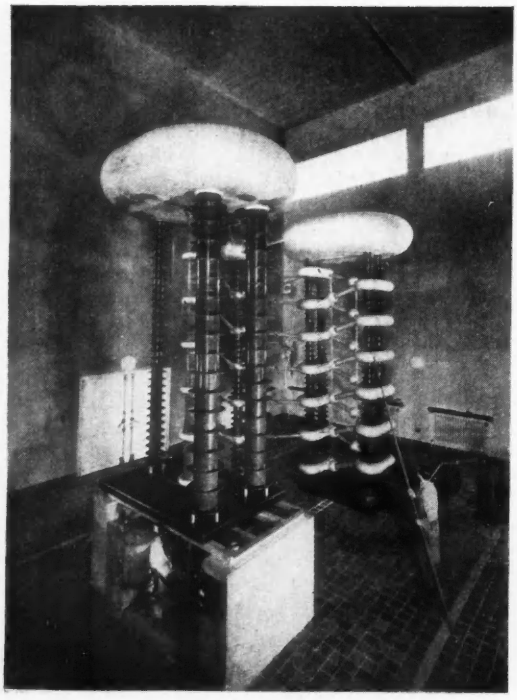
Main entrance to laboratory block.



View of laboratories from the south.

used in the construction of these blocks consisted of steel punchings and not the more normal types of aggregate in common use. Steel aggregate was employed to increase the density of the concrete to approximately 300 lb. ft. cube.

A 6 ft. thick screen wall of these blocks affords the same protection as the adjacent 12 ft. wall. To achieve concrete of this density and at the same time to retain a workable mix, the contractors carried out experimental work on the site under the supervision of the laboratory staff and the architect.



Inside the high tension room.

These blocks are made by constructing an angle iron frame to a high degree of accuracy with all faces at right angles and sides flat and parallel. The frame is then surrounded by accurately made shuttering and the steel-loaded concrete is poured. About one ton of steel is used in each block. Provision for lifting is made by steel inserts. A "stacatruc" is used for transportation and hoisting blocks into position.

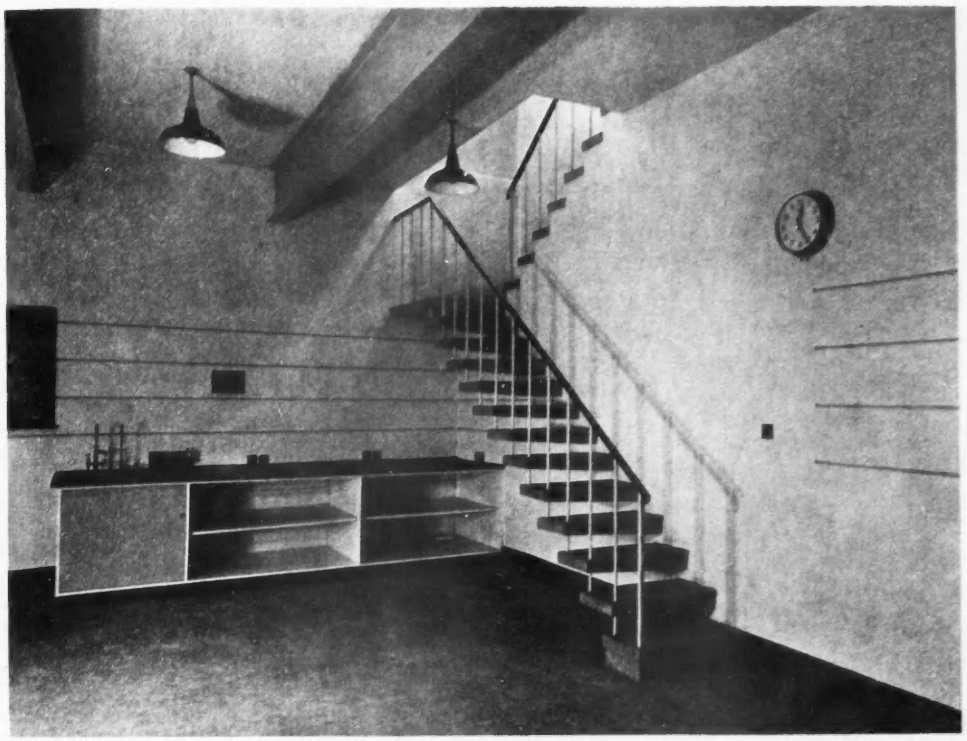
While these blocks are in position across the opening, access into the cyclotron room is gained through a specially designed doorway. This takes the form of an opening (4 ft. wide by 7 ft. high) through the 12 ft. thick mass concrete wall. Built into this wall is a close-fitting 7 ft. diameter steel cylinder filled with sand and weighing about 30 tons. When the cyclotron is not in use the cylinder is lowered so that the top of it can be used as a floor over which access to the cyclotron room is obtained. During the operation of the cyclotron the door is hoisted into position and the opening sealed.

An emergency release lever safeguards against the accidental imprisonment of personnel within the cyclotron room. The door, which can only be closed locally, can be opened from the control room. The auxiliary equipment room immediately over the cyclotron room is constructed of reinforced concrete walls and ceilings with a concrete roof of 54 ft. spanning the full width of the room.

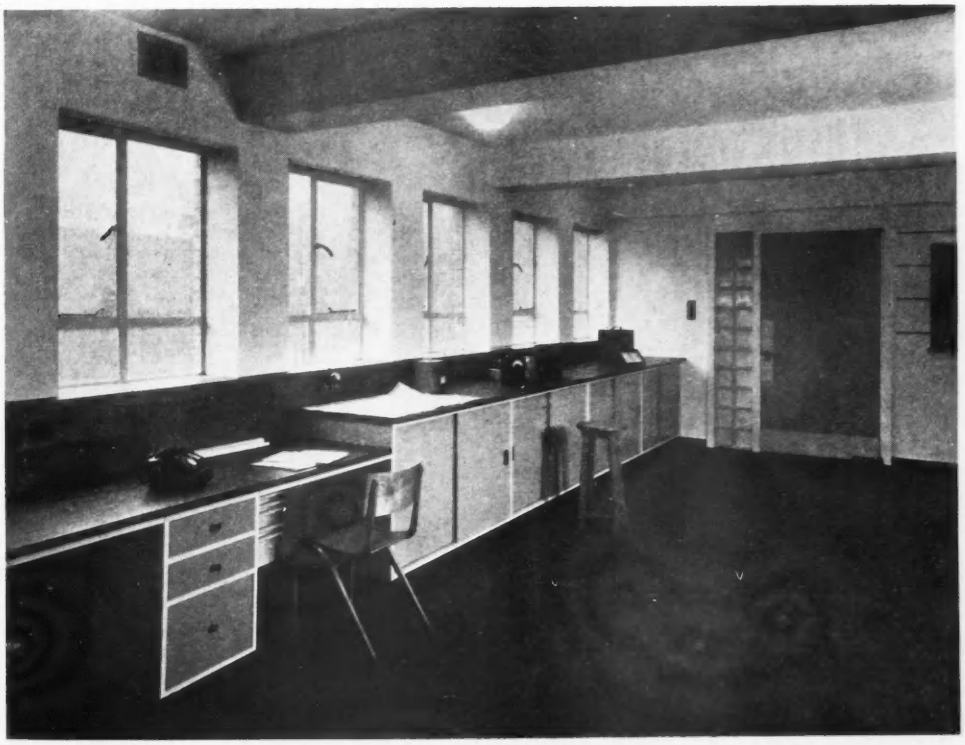
Adjoining the A.E. room is the roof flat over the anteroom. On this roof are housed water towers for the cooling of the cyclotron when it is operating. Throughout this project great care has been taken in the construction of all joints, which, while allowing for contraction and expansion, have to act as screens against the passage of neutrons.

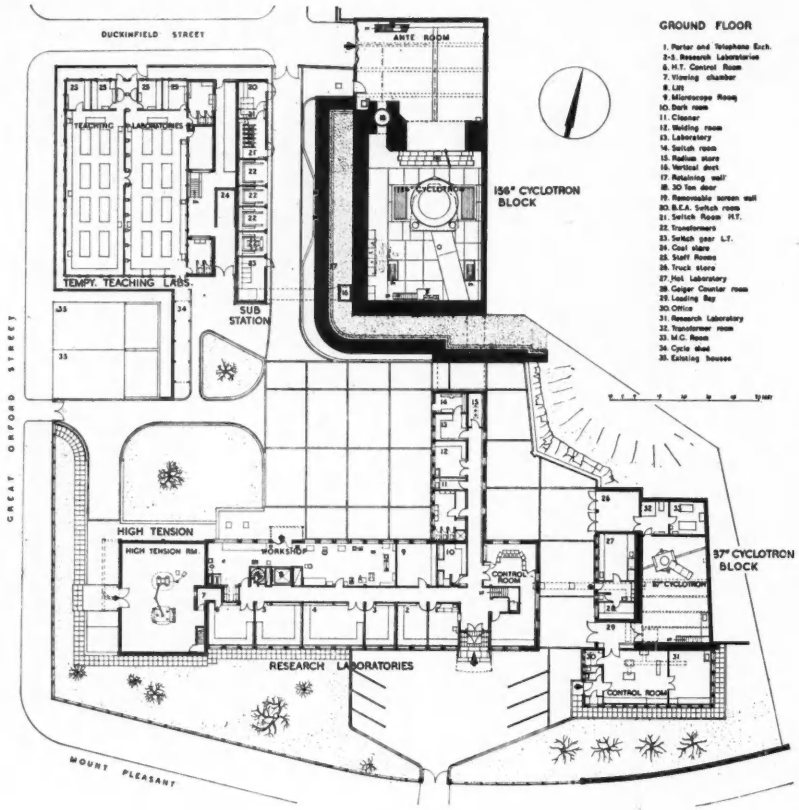
SERVICES

The laboratory building including the H.T. section and the 156-in. building are mechanically ventilated with separate plant installations. The temperature in the H.T. section has, for operational reasons, to be strictly controlled. All buildings except the 37-in. cyclotron are heated by hot water radiators from the boiler installation housed in the basement of the laboratory block. The 37-in. cyclotron building has panel heating embedded in the ceilings, hot water



Above : Stairway leading to the auxiliary equipment room. Below : Control room of the 37-in. cyclotron building.





supply being from the main boiler. The laboratories are supplied with hot and cold water, gas, compressed air, power points, mains clocks and electric impulse clocks controlled by a master clock. Lighting in the laboratories and offices is by cold cathode strip lights, supplemented in the large equipment rooms by tungsten flood lights.

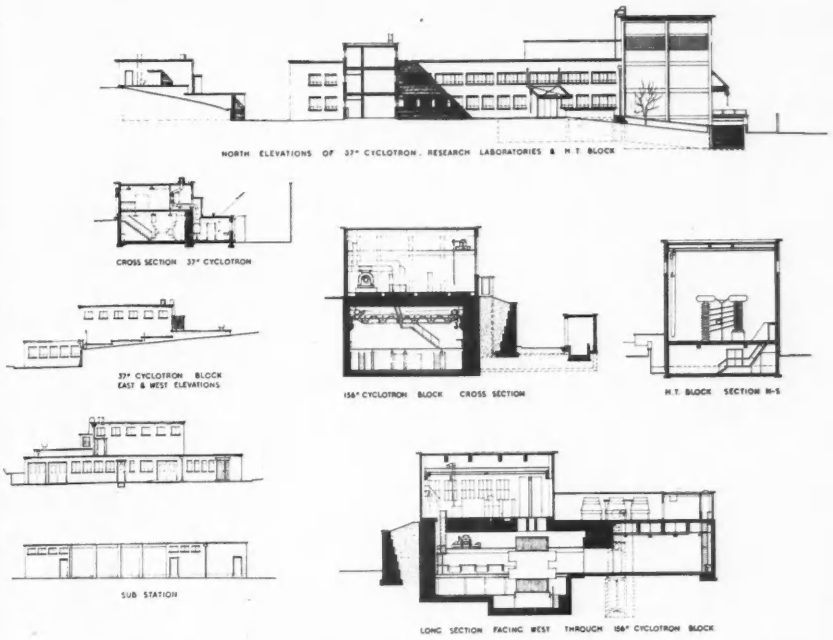
Illumination throughout the 156-in. cyclotron building is by tungsten lighting, supplemented in the cyclotron chamber by powerful flood lights. In the 37-in. cyclotron building tungsten lighting has been used throughout. (A goods lift has been installed in the laboratory block serving basement, ground and first floors). An automatic telephone exchange has been installed for internal calls within the University and for external use.

Services to each of the various rooms have been run from the corridors which means easy maintenance with minimum inconvenience to occupants of rooms. This will also simplify any extensions at a later stage.

FINISHINGS

Laboratory Block.—Walls and ceilings are plastered with MetaMica chosen for its high insulating properties and to minimise noise. The ground and first floor corridors have a false ceiling with removable panels which give easy access to the ventilation ducting and other services running in the duct above ceiling level. In the walls of the laboratories continuous metal channels have been fixed at various heights above floor level. They can be used as supports for blackboards, shelving, or for equipment used for experimental work. The floor finishes are mainly of Granwood blocks and Marquetone, although rubber flooring is used in the basement room of the H.T. research laboratory. All laboratory benches, etc., in this building were supplied and fixed by the main contractor.

156-*in. Cyclotron Block.*—Only the walls of the anteroom have been plastered in this building ; the ceiling being of a dry panel construction. The ceiling of the cyclotron room has been treated with an acoustic finish to minimise noise. The walls and ceilings throughout the remainder of the building have a paint finish. The floors have been tiled using heather brown quarries with the exception of the anteroom which is of " Stelcon " tiles, used owing to the extremely heavy wear to which this floor will be subjected. The external faces of the concrete walls have been brushed after the striking of shuttering to expose the aggregate and present a textured surface.


NORTH ELEVATIONS OF 37" CYCLOTRON, RESEARCH LABORATORIES & H.T. BLOCK
CROSS SECTION 37" CYCLOTRON
37" CYCLOTRON BLOCK EAST & WEST ELEVATIONS
SUB STATION
156" CYCLOTRON BLOCK CROSS SECTION
H.T. BLOCK SECTION H-S
LONG SECTION FACING WEST THROUGH 156" CYCLOTRON BLOCK

Sections and elevations.

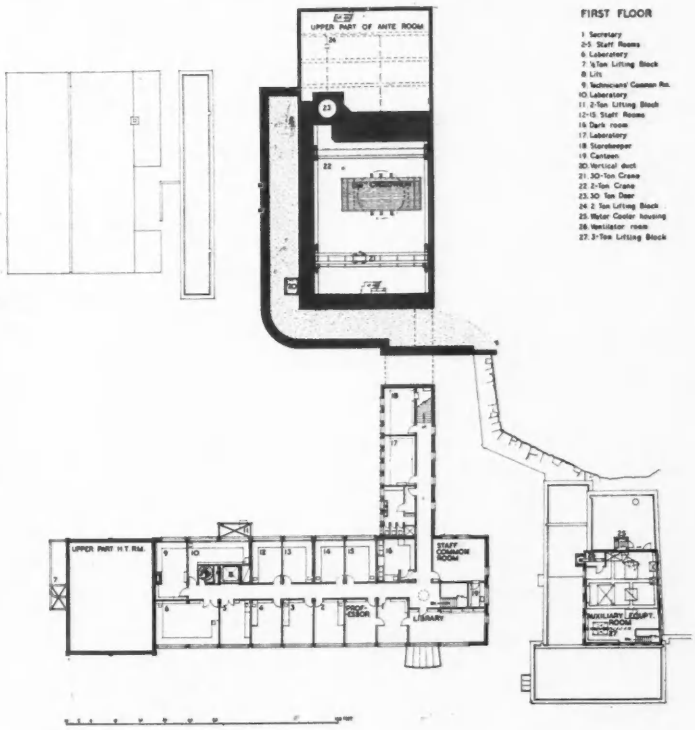
37-in. Cyclotron Building. — All walls and ceilings in laboratories, etc., have been plastered, but the walls in the cyclotron room and A.E. room have been painted direct on to the concrete. Floors in the laboratories are of Granwood block, heather brown quarries in the auxiliary equipment room, granolithic in the cyclotron chamber and rubber in the hot laboratory.

Assistant architects connected with the scheme were K. W. Whitfield, A. R. I. B. A., G. C. Gardiner, A.R.I.B.A., Margaret Howell, A.R.I.B.A. and F. L. Evans, A.R.I.B.A. The buildings were designed in close collaboration with the laboratory staff under the direction of Professor H. W. B. Skinner, F.R.S. Liaison between the University, the architect and the main contractors was the responsibility of Mr. M. J. Moore. Quantity surveyors were Messrs. Furbur and Sons, Liverpool (for the laboratory block and 156-in. cyclotron building), and Messrs. Dansken and Purdie, Liverpool (for the 37 in. cyclotron).

The general contractors were Messrs. Bovis, Ltd., of London. Following is a list of sub-contractors:

Redpath Brown and Co., Ltd., structural steelwork; Wm. Wadsworth and Sons, Ltd., electric lift; G. N. Haden and Sons, Ltd., compressed air, ventilation, heating, hot water, vacuum, cold water, gas; Durable Asphalte Co., Ltd., asphalt floors; Penmaenmawr and Trinidad Lake Asphalte Co., asphalt roofing and tanking works to 156-in. bldg. lab. block; H. and C. Davis, spiral staircase; Durafencing, Ltd., chain link fencing; J. Avery, blinds; Beaumants, Ltd., false ceilings; Troughton and Young, electric light and power; Mears Bros., Marquetone flooring; John Stubbs, floor tiling; Granwood Flooring Co., Granwood flooring; Houghton and James, granolithic flooring.

Williams and Watson, glazing; James Clark and Eaton, hollow glass blocks; Pollock Bros., Ltd., plastering to 37-in. bldg.; Ioco, Ltd., rubber flooring; Communication Systems, Ltd., switchboard cabling; Steelways, Ltd., steel flooring in cyclotron room; Rubery Owen, Ltd., steel office furniture; Bolton Gate Co., shutter gates; R. W. Brooke and Co., Accotile flooring; Decorators, Ltd., sprayed Pyrok; Newalls Insulation Co., Ltd., sprayed asbestos; Gyproc Products, acoustic ceiling; William Briggs, Ltd., felt roofing to 37 in. bldg. and roof of 156-in.; MetaMica, plastering to laboratory block; Faldo, Ltd., tanking to 37-in. bldg.



Elevation of classrooms.

BROMFORD ROAD COUNTY PRIMARY SCHOOL, BIRMINGHAM

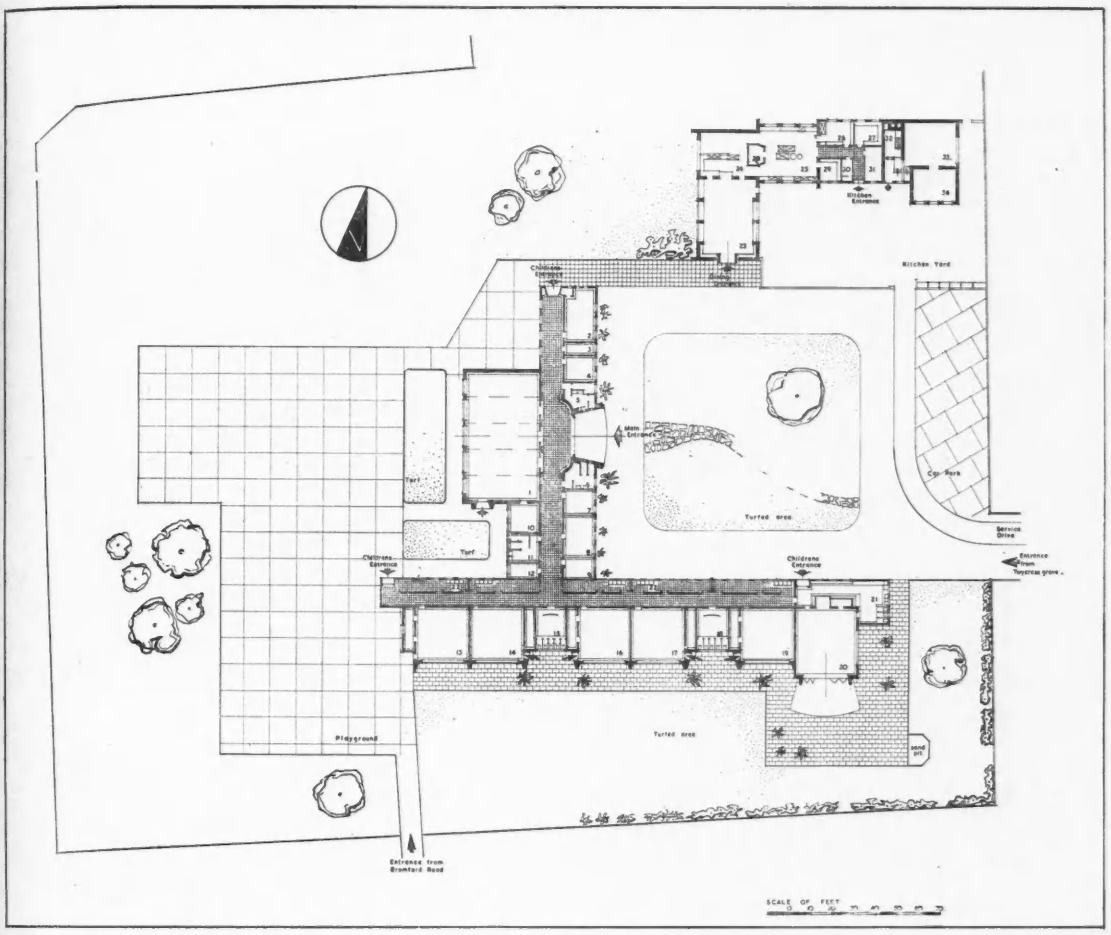
ALEX. STEELE, Dip.Arch.(Edin.),ARIBA, ARCHITECT TO BIRMINGHAM EDUCATION COMMITTEE

A. C. BIRD, ARIBA, ASSISTANT ARCHITECT

THIS school, which was opened by Sir John Maud, K.C.B., C.B.E., Permanent Secretary to Ministry of Education, on November 17 last, stands on a large site on the eastern side of the city and will serve an area of extensive post-war housing development. Designed early in 1949, the building is being used to provide accommodation both for infant and junior children, but will eventually become a two-form entry infant school, for which purpose it was designed, with accommodation for about 240 children. On the same site, it is intended to erect a nursery school, a four-form entry secondary modern school (mixed), and a four-form entry grammar school for girls. The new buildings include five classrooms and a reception classroom, assembly hall, usual ancillary accommodation, a dining-room and a kitchen. They have been planned in relation to the future junior school, and the kitchen and dining-room unit will eventually serve both schools, to which it will be joined by covered passageways.

STRUCTURE AND FINISHES.

In order to reduce the amount of steelwork required, all walls are of load bearing brickwork. The walls between classrooms support rolled steel joists carrying the precast roof beams, which are finished with vermiculite screeding to provide insulation, and built-up felt roof covering. A wide eaves canopy is constructed over the classroom windows to reduce glare from the sun, and obviate the necessity for sun blinds. Cross ventilation and make-up lighting to classrooms and assembly hall is provided by clear-storey windows above corridor roofs. Ceilings are of $\frac{3}{4}$-in. insulation boarding supported on metal bearers by an invisible fixing method. Externally the buildings are faced with $2\frac{5}{8}$-in. multi-coloured rustic bricks,



KEY TO PLAN

1 Assembly hall.
2 Medical room.
3 Waiting room.
4 Head teacher.
5 Male visitors' lav.
6 Female visitors' lav.
7 Rest room.
8 Staff room.
9 Staff kitchenette.
10 Footbath and store.
11 Staff lav.
12 Stockroom.
13, 14, 16, 17 & 19 Classrooms.
15 & 18 Lavs.
20 Reception class.
21 Reception cloaks.
22 Coats and wash.
23 Infants' dining room.
24 Canteen servery.
25 Canteen kitchen.
26 Larder and meat prep.
27 Dry goods store.
28 Canteen office.
29 Vegetable store.
30 Canteen staff lav.
31 Canteen staff room.
32 Pump room.
33 Heating chamber.
34 Fuel storage.

Entrance hall.

except the main classroom elevation which has terrazzo faced fins which act as sun baffles and also encase vertical rainwater pipes. Floors to the main entrance and corridor, lavatories and canteen kitchen are 12 in. by 12 in. terrazzo tiles with *in situ* border and skirting. Classroom corridor, cloakrooms and dining-room have magnesite composition floors, and classrooms beech block. The floor to the assembly hall is Mounha wood block, the reception classroom thermoplastic tiles. Dadoes in corridors, lavatories and canteen are of patent permanent hard glaze with a stippled finish to harmonise with the general colour scheme. Each classroom is identified by a coloured animal or bird painted on the door instead of the usual numbering. This feature has a definite appeal to the small children, as do the various line murals in the school.

Heating is by low-pressure accelerated hot water, with pipes concealed as far as

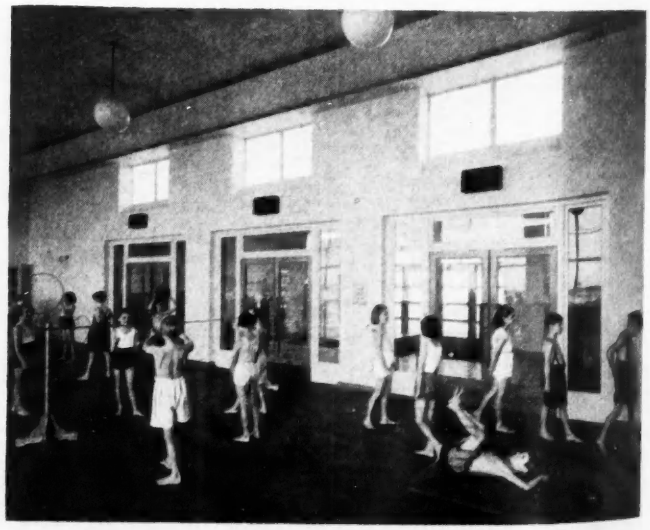
BROMFORD ROAD COUNTY PRIMARY SCHOOL. Above: Reception class. Below: Assembly hall.

possible. "Ray-rads" are provided in the reception room and radiators elsewhere. Hot water is obtained from calorifiers heated by the general heating system, supplemented by immersion heaters.

The quantity surveyors were Messrs. Collins and Britton, FF.R.I.C.S.; the engineering services by Mr. H. J. Manzoni, C.B.E., M.I.C.E., City Engineer and Surveyor; consultant engineer, Mr. D. W. James Carrington, B.Sc., M.I.Struct.E.; Mr. M. W. Oliver was clerk of works; and Messrs. Geo. Wimpey and Co. Ltd., the general contractors. Following is a list of sub-contractors and suppliers:

Heating and domestic hot water, Henry Hope Heating and Engineering Co., Ltd.; lighting, Walker Bros.; structural steelwork, Bannister Walton Co., Ltd.; precast roofs and canopies, Siegwart Floor Co., Ltd.; metal windows and dome lights, Monk Metal Window Co.; suspended ceilings, Midland Wallboards and Co., Ltd.; terrazzo floors, pilasters, fins and "Ropol" composition flooring, Roman Mosaic, Ltd.; hat and coat fittings, Mountford Bros.; ironmongery and roller shutters, Parker, Winder and Achurch, Ltd.

Wood block flooring, Bennett's Wood Flooring Co., Ld.; Accotile flooring, R. W. Brooke and Co., Ltd.; sanitary fittings, William E. Farrer, Ltd.; fire surrounds, Rowe Bros.; tarpaved areas, Birmingham Asphalte and Paving Co., Ltd.; built-up felt roofing, General Asphalte Co., Ltd.; gas services, West Midlands Gas Board; paint manufacturers and mural decorations, Docker Bros.; brick manufacturers, facings, Bleckley Brick Co.; commons, London Brick Co.; engineering, Aldridge Brick and Tile Co., Ltd.; "Emalux" glazed dadoes, John Ellis and Sons.



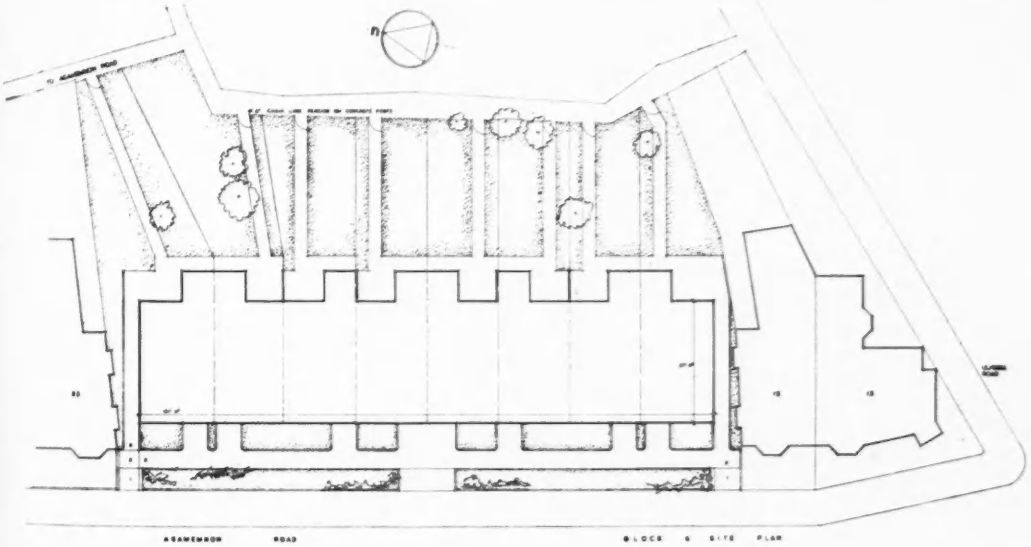
Front to Agamemnon-road.

THREE-STOREYED HOUSES FOR HAMPSTEAD BOROUGH COUNCIL

C. E. JACOB, ARIBA, HOUSING ARCHITECT TO THE COUNCIL

IN a built-up area such as Hampstead the number of building sites is limited, and full use has to be made of sites rendered derelict through bomb damage. In the restricted space available for this particular scheme (net area 0.287 acre, and gross area 0.372 acre) it was decided to erect three-storey terrace houses, each with its own small garden at the rear. By doing so, a density of 120 persons to the acre has been achieved, as compared with other schemes prepared for a two-storeyed building of eight houses (density 72 persons to the acre) and three-storeyed flat development (density 108 persons to the acre). It was also considered that flats would be incongruous with the surrounding two-storeyed houses.

Front and back access have been provided, the back entrance being approached under a covered lobby which connects the kitchen to the w.c., store



Layout.

Detail of doorway.

and fuel store. The ground floor consists entirely of entrance hall, dining recess (9 ft. by 10 ft.) and kitchen (9 ft. by 12 ft. 3 in.).

The first floor contains the living-room (15 ft. 6 in. by 12 ft.), the bathroom and w.c. and a bedroom (9 ft. by 8 ft. 3 in.), whilst bedroom No. 1 (15 ft. 6 in. by 12 ft.) and bedroom No. 2 (12 ft. 3 in. by 9 ft.), with built-in wardrobes, are placed on the second floor, together with a large store cupboard.

CONSTRUCTION DETAILS

It has been possible by building in this way to reduce the frontage of each house to 16 ft. 3 in. between the centre-lines of party walls without cramping any of the rooms. The superficial area of each house is 1,174 sq. ft.

The general construction is traditional, with dark $2\frac{5}{8}$-in. Surrey multi-pressed red-brown facing bricks. The external walls are 14 in. brickwork, with an internal brick spine, and elsewhere 2 in. or 3 in. breeze slabs. Double Roman tiles have been used on roofing felt secured to " Precision " grillage, and the roof trusses are of mild steel angles spanning 26 ft. 9 in., situated on the centre-line of each house.

The ground floor is of 4-in. concrete on 6-in. hard-core, finished with Marley tiles to the dining recess and hall, and with granolithic paving elsewhere, whilst the first and second floors are boarded on joists.

For the front elevation the windows were purpose-made, but standard metal windows are used at the rear.

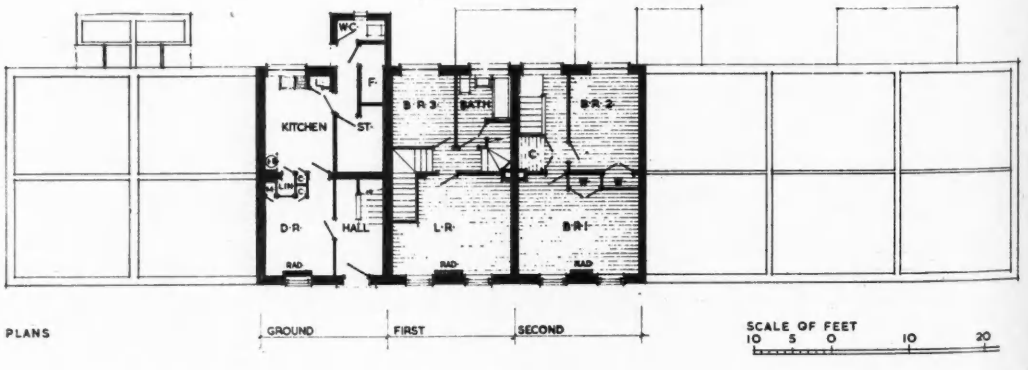
THE HEATING EQUIPMENT

Open fireplaces are not provided in the houses; each house is fitted with a domestic boiler in the kitchen, supplying space heat to the dining recess, sitting-room on the first floor and bedroom No. 1 on the second floor. The boiler also supplies domestic hot water to the sink, bath and lavatory basin through an indirect cylinder which is tapped for an immersion heater to be fitted by the tenant if so desired. The primary circuit and cylinder are lagged, and over the second floor ceiling joists aluminium foil insulation has been provided to prevent heat loss through the roof space.

The system is designed to maintain a temperature of 65 deg. F. in the sitting-room and dining recess, allowing for $1\frac{1}{2}$ to 2 air changes per hour, and 50 deg. F. in the bedroom with $1\frac{1}{2}$ air changes per hour when the external temperature is 32 deg. F. The circuits are in galvanised iron and the heating pipes are left exposed in rooms and have been included in the heating surface.

Electric heating points have also been installed in the dining recess, living-room and one bedroom for additional heat if required. By adopting this method for heating and domestic hot water supplies it is hoped to economise in heating costs and less work for the housewife should result.

The estimated cost of the eight houses, excluding site abnormals, was £17,800, or £2,225 per house; the cost per foot cube was 2s. 6d., or 37s. 9d. per foot super. The builders were H. Parfitt and Sons, Ltd., Harrow-road, Wembley.



Plans.

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THE ARCHITECTURAL ASSOCIATION

Discussion on Exposure, Durability and Maintenance in Modern Design

EXPOSURE, durability and maintenance in modern design was the very practical subject lectured on by MR. HOPE BAGENAL, D.C.M., F.R.I.B.A., at a meeting of the Architectural Association, held at 36, Bedford-square, W.C.1, on January 30. Mr. Anthony Chitty, F.R.I.B.A. (President), was in the chair.

Mr. Hope Bagenal said that to-day practising architects had before them two classes of building, i.e., the short-term and the long-term. The short-term was concerned with initial cheapness and speed of erection; it implied high cost for maintenance and repair and often assumed a factory basis. Long-term building still relied on the older standards of durability; it must stand up to much longer periods of wetting and drying, and could not afford high maintenance; but to-day our common building materials were such as machine-made bricks, cement, mortars, reinforced concretes and reconstructed stone. They had a qualitative variability which increased risk. This variability could be seen most strikingly when contrasted with the era, now gone by, of the hand-made brick. It called for standard specifications and codes of practice, and in the case of machine-made bricks it had devised the two categories of weatherproofing—i.e., normal exposure and severe exposure occurring on the same building—and had based standard specifications upon that distinction. But while modern materials required greater attention to weatherproofing, the modern style with its emphasis upon unbroken surfaces did not give this.

If a scale of detailed precautions was invented and generalised we should have better and more interesting building. Some buildings, such as new churches, had to run the risk of longer periods of neglect but were built to have long life, and such cases called in question the use of modern materials which had not been tested over long periods. What was the expectation of life of reinforced concrete? We had examples of the effect of severe exposure on our sea-coast buildings, but no satisfactory test could be made if the original specification and technique were not known. Architects ought to preserve their specifications and take an interest in the long-term performance of their buildings.

Reinforced Concrete

Speaking more particularly of reinforced concrete, Mr. Bagenal said it was now used for churches, and these were often neglected for a generation. He had recently visited a cathedral where no one had been in the roof space for observation purposes for 25 years. We might ask whether a 30-year-old reinforced concrete building with exposed elements doing their job was known. Recently he had seen one 18 years old having a concrete cill with rods already exposed. In this country reinforced concrete was not older than the century; it must be experimental for another 50 years at least. But it was put to the hardest uses, such as sea walls, docks, factory floors and sewers, and if the original specifications were preserved, the performance over long periods of the cement mixes and steels would eventually be known. In civil engineering we were in a better case than in architecture for comparing in future years known materials with their performance, but even here it was often the case that one could only draw the indefinite conclusion that concrete of uncertain quality had not behaved satisfactorily. For churches and monuments exposed to risk of neglect, good-quality concrete was essential, and, in addition to ordinary technical points such as low water ratio, grading of aggregate and workability, there were others, such as frost resistance. In the United States and in Sweden greatly improved frost resistance was obtained by mixing with the cement or concrete a small quantity of a pine resin or albumen which entrained air so that minute air bubbles were formed. Such air-entraining concerned architects in the matter of exposed cills, kerbs, copings to walls and exposed uprights. An important point in the design of churches and all uninspected buildings was that increased service life and reduced maintenance costs would be obtained if the tops of walls, cills and ledges were sloped to prevent the accumulation of snow and water. Some architecture always tried to give a weathered upper surface to beams, kerbs and upstands, so that wherever these found themselves in the roof of a building water would not stand upon them.

Mr. Bagenal said he had written to the Cement and Concrete Association, asking some questions, and a helpful reply from Mr. P. G. Bowie quoted a publication of the Institution of Civil Engineers limiting the permissible stress in the reinforcement to 12,000 lb. per sq. in. and advocating a mix consisting of 112 lb. cement, 2 cu. ft. of fine aggregate and 4 cu. ft. of coarse aggregate. Mr. Bowie recommended that wherever concrete was exposed to the weather the cover to reinforcement should never be less than two inches. This applied not only to main bars, but to subsidiary stirrups and bindings. Mr. Bowie noted the difficulty of forming *in situ* such projections as cills, and recommended a simpler and flatter design. He (Mr. Bagenal) pleaded that in the case of churches there should be included in the structure access galleries and inspection ways; if means of inspection existed to haunches, kerbs, roof spaces and roof flats, these could easily and regularly be kept under inspection. This remark applied especially to shell structure concrete vaults, and these should always have good pitched roofs over them. Reinforced concrete bridges stood up to vibration. They were generally in a well-balanced equilibrium with load rapidly transferred to low level, but this was not always the case with roofs that were sloped or had a noticeable downward curve. Thrusts might develop from small movements under continuous vibration, and it would be better design under vibratory conditions to keep a reinforced structure a level beam and dead load system. It was desirable that bituminous roof felt should be examined every ten years. Cast lead was said to have a longer life than milled lead; where lead was unobtainable, pure aluminium was likely to be durable, but ought not to be used on the same roof with copper.

DR. NORMAN DAVEY, of the D.S.I.R., said that civil engineers had their problems, more particularly on the structural side, and Mr. Bagenal had referred to rather bad experiences with reinforced concrete. He (Dr. Davey) asked if anybody would show him an exposed reinforced concrete structure more than 25 years old and not showing cracks or other defects. Anybody who put up a 3-in. reinforced concrete shell roof should put some weather protection over it. Prestressed concrete was a very recent development. In the event of fire. if steel reached a temperature of 400 deg. C. it lost its high tensile property; if prestressing was applied to structural members, adequate precautions must be taken. Architects should record what they did, and should place the record at the disposal of the Building Research Station.

MR. ALAN HAGGAR said that experience at Southampton had taught him that not only could rain travel downwards; it could travel horizontally and upwards. At Southampton, a local hand-made brick was used, uniform in colour and very porous. In the past this had given rise to certain practices in dampcourses, not up to present standards but rendering buildings waterproof. In the heaviest storms it was almost impossible to prevent water from penetrating walls of porous brickwork; as it ran down the face of the wall the wind drove it through the openings. There had been many failures in attempts to render walls of 9-in. or 13½-in. damp-proof by rendering. The answer was to use the cavity.

Mr. J. MACGREGOR told of a Georgian house some rooms of which had originally been panelled. In Victorian times the panelling had been taken out of two of these rooms and cement-rendering put on outside. This had cracked, and water had got in and could not get out through the rendering. Consequently the walls inside were in a shocking state. But in rooms where the panelling had not been touched the whole thing was as good as when first built. If one had a surface in which water held but could evaporate out, one had a waterproof wall. Lime washing was used in the middle ages; it did not form an impregnable skin but the moisture hung on to the lime and evaporated. In stones like blue lias lime he had found disintegration stopped by applying lime.

MR. J. BRANDON-JONES said he had spent most of the war in Orkney and Shetland. Building for the Admiralty, the engineers wanted a 9-in. brick wall. He proposed a cavity wall, but the contractor said that such building was unknown there. Tar was applied. Pure cement and pebble were put on rather thin, and tar was thrown over that. During the six years that he was there it was all right so far as he knew. In Fair Isle every sort of building construction had been tried without success. until finally the islanders were allowed to build in ordinary local rubble stone.

MR. MICHAEL GOWERS said he had been particularly interested in the remarks about concrete roofs: he could not imagine anyone being so rash as to build a concrete roof without putting weather-proof material over it.

Replying briefly to the discussion, MR. BAGENAL said that his object was to encourage architects to ask questions and find their own solutions. If an architect was building a church with a shell roof, he should realise what he was doing. If he had a thoroughly useful method for heat-insulation and weather-proofing that was excellent, but he should know what his specification was and see that it was carried out. Architects often went into brand-new methods without taking the precautions civil engineers took.

SUBSOIL INVESTIGATION AND THE ARCHITECT

The Estimation of Load-Bearing Capacities

By DR. VICTOR J. MAUTNER

THIS article is intended for those architects and engineers whose practices bring them only occasionally into touch with foundation problems. Its object is to make them broadly acquainted with the relation between building load and the performance of the underlying subsoil.

When faced with the selection of a suitable site for a proposed building, or planning a structure on a given site, such general knowledge may be helpful in deciding on the extent to which soil exploration should be carried out.

Design and construction methods applied to building foundations have until recent times been based to a large extent on assuming "permissible bearing pressures" for various subsoils. These have been classified in most of the building codes mainly by names vaguely indicative of soil behaviour.

Heavy brick buildings with freely supported timber floors predominated in the past and the design of foundations from tabulated values of load-bearing capacity rarely resulted in disastrous failure. However, the safety and stability of foundations under intricate monolithic reinforced concrete structures, steel framework, etc., depend to a much higher degree on the performance of the subsoil.

THE COST FACTOR

Unequal settlements, lateral movements, swelling and other phenomena due to the actual state of subsoils may add materially to the computed stresses in the framework and cause serious structural damage. On the other hand uncertainty in assessing soil behaviour under given conditions of loading induces the designer to adopt low bearing values, thus increasing building costs unnecessarily.

The performance of the principal materials of construction such as steel, concrete, brick and timber under various conditions can be safely predicted from tests based on extensive physical and mechanical research. However, systematic research on soil properties as well as on technical geology began only in the first decade of this century, when the new science of soil mechanics originated.

The interpretation of site investigation and laboratory tests based on soil mechanics research may aid the designer in arriving at a reasonable assessment of subsoil behaviour values of bearing capacity, ultimate settlement, etc., deduced from these sources agree more closely with soil behaviour than those determined empirically. Systematic soil exploration, therefore, will lead to a choice of a reasonable factor of safety as a basis for foundation design.

SOIL CLASSIFICATION

Many systems of soil classification have been proposed. In the following notes three main groups of subsoil are described according to their physical characteristics.

In all three groups density influences to a high degree the behaviour of subsoils; it depends on the "voids-ratio," namely the volume of voids between grains filled with air and water per unit volume of solid particles in soil.

(i) *Gravel and sand (coarse and fine).*—Gravels are cohesionless materials consisting of particles more than 2.0 millimetres in size. Particles between 2.0 and 0.05 millimetres in size are described as sand. Such soils when composed of nearly spherical particles of almost equal size exhibit a higher degree of density than materials containing predominantly flat grains, e.g., mica.

The internal forces acting in a cohesionless material are caused by friction and compression. Water content can be neglected, except in regard to performance under submerged conditions (uplift, liquid flow, etc.).

Such soils generally form very satisfactory bearing materials depending on their compactness only for their stability.

(ii) *Silt or rock flour (loess and loam).*—These are partially cemented soils of medium cohesion, made up of fine grained materials of 0.1-0.002 millimetres dia. Their density is usually very low.

Internal forces are produced by adhesion (cementation) and friction (capillary forces). The water holding capacity is enhanced by the existence of root channels. The effect of capillarity is usually detrimental (lateral flow).

All types of silt are dangerous subsoils of doubtful stability.

(iii) *Clay (clay and colloids).*—These consist of highly cohesive materials composed of very fine inorganic particles a large proportion of which are flat or scaly shaped (mica, etc.). The size of grains ranges from 0.002-0.0003 millimetres dia., the latter figure referring to colloids.

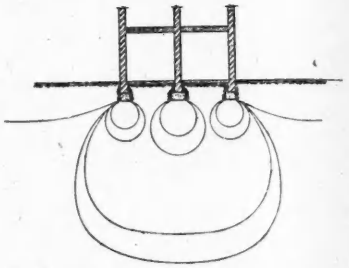


Fig. 2 PRESSURE DISTRIBUTION BELOW THE BOTTOM OF A BUILDING

The density is, therefore, low. Internal forces are due to adhesion (molecular attraction) and friction (capillary forces). With increasing water content clay changes from the very hard state to a liquid condition.

Clays of soft to hard condition provide suitable subsoils of medium to high load-bearing capacity.

This classification gives only a rough idea of the performance of a given soil when subjected to building loads. Each individual case, particularly among cohesive soils, requires careful consideration based on site exploration and laboratory tests by soil experts.

PRESSURE DISTRIBUTION

The intensity of pressure created in a soil by a foundation load determines the extent to which soil investigation should be carried out. For example, Fig. 1 indicates the range within which perceptible stresses are induced in the subsoil, in this case sand, under a loaded rigid column footing.

The lines of equal maximum vertical stresses (isobars) circumscribe areas of a bulblike shape (pressure bulbs). The contours of "pressure bulbs" depend upon the adopted unit load imposed on the foundation, and the area and shape of the foundation.

As can be seen from Figs. 1 and 1a, the "pressure bulbs" under a series of strip foundations or individual footings combine to form an enveloping total pressure bulb.

In Fig. 2, the isobars of pressure bulbs

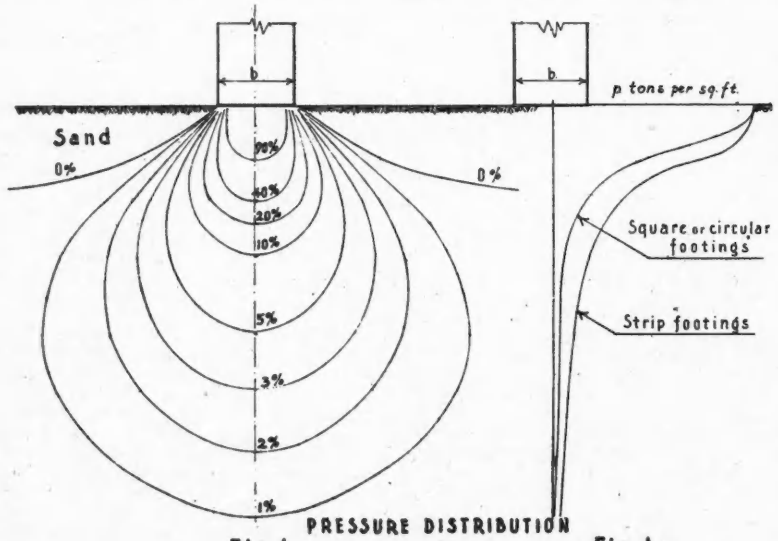
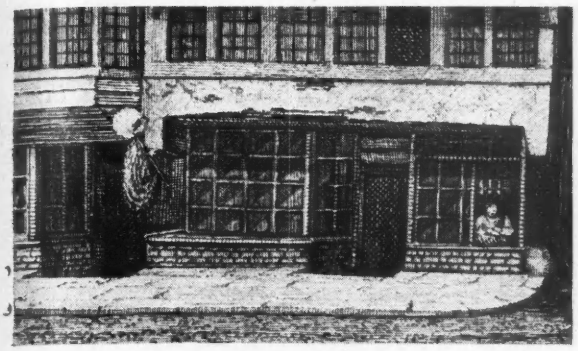


Fig. 1 PRESSURE DISTRIBUTION Fig 1a

HIDE AND SEEK SHOPPING OF THE PAST



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The Queen's Nursery, Golden Lane, Barbican. Late seventeenth century.

From J. T. Smith's Antiquities of London.

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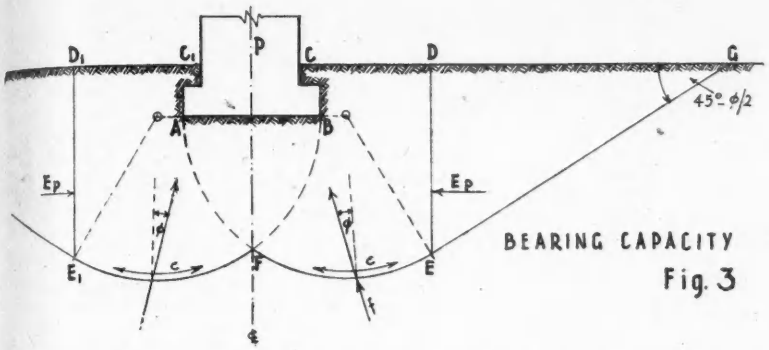


Fig. 3

give a guide to the depth to which soil exploration is necessary. Various suggestions have been made for the determination of this depth. The rule in force in the United States, i.e., " to one and half times the least width of the building," may be generally adopted. Particular conditions such as clay and silt strata underlying a firm soil at a greater depth, ground water, etc., require appropriate consideration.

SOIL INVESTIGATION

The principal tests which are supposed to yield useful information on foundation problems and therefore have received general recognition will now be discussed briefly without going into details of procedure.

(*i*) *Site exploration.*—The excavation of test pits makes it possible to establish the nature and depth of soil strata as well as the occurrence of ground water below a proposed building. From such pits, too, undisturbed soil samples are secured for the necessary laboratory tests.

The depth of test pits is usually restricted to about 12 to 15 ft. owing to the high cost of excavation. Undisturbed samples from greater depth may be obtained by driving the sharp cutting edge of a casing to the required stratum and using a sampler.

From pumping tests the permeability of water-bearing soils, which is of great importance in the execution of foundation works, can be computed. Loading tests on small areas have generally proved to be unreliable as they do not cover the whole range of the pressure bulb under the actual foundation load. (Fig. 1 and Fig. 2). However, such loading tests may be used in the case of a cohesionless soil of considerable depth as a supplement to laboratory investigations.

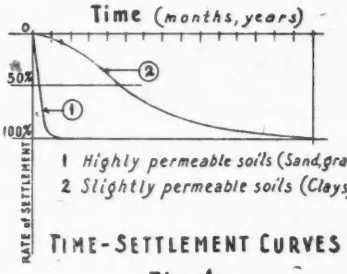
(*ii*) *Laboratory tests.*—The undisturbed samples, carefully secured and coated with paraffin at the site, are used for tests in the laboratory. Broadly, in case of cohesionless soils, the determination of the natural density, compressibility, direct shearing strength, the angle of internal friction and the grain-size distribution provide valuable hints for foundation design.

So far as cohesive materials are concerned, determinations of natural water-content, cohesion, consistency, liquid and plastic limits and consolidation are essential.

Behaviour of subsoils under foundation loads.—The subsoil under any foundation load will be subjected to the following marked changes in its original conditions, which control its permissible bearing value :

(i) Elastic compression by the deformation of its single grains.

(ii) Consolidation of the soil, which is caused by squeezing-out of the air-water content and the realignment of soil grains, resulting in the reduction of the volume of voids. Fine-grained soils such as clays exhibit a high degree of consolidation due to pore-water loss in a vertical direction.



TIME-SETTLEMENT CURVES
Fig. 4

(iii) Lateral movement of the loaded soil towards the surrounding unloaded ground.

BEARING VALUES

The selection of a permissible bearing value depends on two factors. First, the actual bearing capacity, defined as the maximum unit load which may be applied to a soil without causing ultimate failure. Second, the permissible settlement defined by functional requirements.

The adopted bearing value must satisfy both requirements. Therefore, an adequate factor of safety should be taken into account against ultimate rupture in the ground and against settlement. Generally, an overall factor of safety between 1.5-2 may be sufficient. For structures very sensitive to settlement, such as high chimneys, or buildings exposed to vibration and impact caused by heavy machinery, the factor of safety might have to be increased according to circumstances up to 3. On the other hand, a thorough knowledge of the properties of the soil may permit of a reduction in the safety factor.

(*i*) *Ultimate bearing capacity.*—Computation of the ultimate bearing capacity based on the shearing strength of the soil should give accurate results. Fig. 3 illustrates how failure takes place in the ground under a loaded foundation. The surface of rupture forms a cylinder terminating in a plane making an angle with the horizontal surface.

Prior to ultimate rupture the acting and resisting forces should maintain equilibrium.

The ultimate bearing capacity, therefore, is found in case of assymmetrical as well as symmetrical rupture by equating the foundation load " P," and the weight of the soil between A B C D E F A (B A C_1 D_1 E_1 F B) with the resisting forces provided by the friction and cohesion (if any) along the surface A E (B E_1) plus the passive earth pressure " E " acting in a horizontal direction at a point one-third lower on the plane D E (D_1 E_1). The specific gravity, friction and cohesion of the given soil may be obtained from laboratory tests.

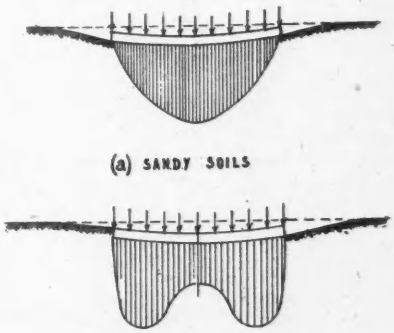
(ii) *Settlement.*—Cohesive and cohesionless soils do not show identical characteristics of settlement.

Cohesionless soils.—Cohesionless soils such as sands and gravels commonly do not present difficult problems with regard to settlement. The value of their safe bearing capacity is generally controlled only by the ultimate rupture of the ground. Till this occurs settlements are not to be expected to exceed permissible limits. The amount of settlement, of course, increases with rising soil pressure.

Settlement also depends on the area and shape of the base. Under the same foundation unit load the settlement increases with increasing width of the base at a decreasing rate until for large areas it becomes independent of the size of the loaded area. (Fig. 4(1).)

The density of the subsoil has an influence on the amount of settlement. Under the same foundation load fine sands, mainly loose in natural deposits, are exposed to greater settlement than coarse sands and gravels which generally form compact layers.

Cohesive soils.—The extent of settlements in cohesive soils has not so far been precisely predictable. Compared with cohesionless soils the rate of settlement may be slow. Consolidation depends on the coefficient of permeability and the depth of the layer. It may be accom-



PRESSURE DISTRIBUTION on FLEXIBLE FOUNDATIONS
Fig. 5

plished within one or two years, as regards coarse grained silt, while soils of low permeability, such as typical clays, may require up to 100 years. (Fig. 4) (2).

As with cohesionless soils the magnitude of the settlement increases with rising soil pressure and depends on the shape and area of the foundation.

EFFECT OF WATER CONTENT

The water content of the soil has considerable influence on the magnitude of settlement. Clays with high moisture content (liquid or plastic state) display greater settlement than similar materials with low moisture content (semi-solid or solid) under the same foundation load.

It is important that foundations should be carried down to an appropriate level (Fig. 4) to prevent the effects due to seasonal fluctuations in moisture content. From observations on London clay it appears that below the depth of 5 ft. to 6 ft., the moisture content remains reasonably constant.

Serious consideration should also be given to shrinkage movements on clay sites. The depth to which shrinkage might occur depends mainly on the shrinkability of the soil and the effect of drainage. Movements due to shrinkage may be expected up to 6 ft. below the surface and even deeper strata may be affected.

To guard against movement caused by frost action it is necessary to carry foundations below the frost line, which lies about 3 ft. below ground level.

The depth of the foundation has an important bearing on the costs of houses. Bearing in mind that the magnitude of foundation movements decreases rapidly with increasing depth, it may only be necesary to eliminate movements occuring in the upper strata. Thus, if foundations were carried down to at least 3 ft. to 4 ft. the effect of such variations might be avoided.

The correlation of soil properties with the structural properties of the base of the foundation may be referred to, briefly. In general, soil pressure induced by a symmetrically loaded foundation does not —as assumed in the past—act uniformly and is not distributed across the entire area of the base. In fact, the pressure distribution depends simultaneously upon the soil characteristics and the structural properties of the base. Therefore, in some cases, it may vary considerably.

The maximum pressure may occur below the centre of the foundation or near its edges according to the rigidity of the base and the properties of the soil.

Fig. 5a and Fig. 5b illustrate, for example, the pressure distribution to be expected under an elastic foundation slab in case of sand and clay respectively.

CONCLUSIONS

The procedure for carrying out soil-investigation could be summed up as follows :—

(*a*) A general layout of the proposed building should be prepared indicating the location of the loads imposed upon the foundation as well as their magnitude.

(*b*) From this the required number of boreholes and test pits as well as their depth and position should be determined.

(*c*) In connection with field exploration such laboratory tests on undisturbed samples as necessary should be made.

(*d*) Cautious interpretation of all the results available from site and laboratory investigations.

(*e*) Any data of soil characteristics available from nearby structures having similar foundation conditions should be considered. Taking cognizance of comparative values may justify, in certain cases, a limitation of the necessary investigation. In all circumstances such data will be helpful in verifying results of actual exploration.

The cost of soil investigation is small considering the vital design information obtained.

In some cases the omission of site investigation may lead to serious consequences. Meeting with unexpected soil conditions may result in a considerable increase in the estimated cost of the building and may even necessitate changing the type of foundation during the course of construction.

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R.I.B.A.

The Final Examination

THE final examination was held in seven centres from November 28 to December 7 last. Of the 449 candidates examined, 167 passed as follows:—

Passed whole examination, 74; passed whole examination subject to approval of thesis, 46; passed part 1 only, 47. 282 candidates were relegated. The successful candidates are as follows:—

WHOLE EXAMINATION

A. J. Anderson, *B. J. R. Anderson, T. Andrzejaczek, Miss J. M. Aylwin, I. L. Bailey, A. W. Barnes, T. Bates, *L. Beioley, D. W. Bell, *D. G. Biggs, G. C. Bodker, G. M. Britton, B. M. Broadbridge, P. Brown, *J. A. Buck, *J. A. Bull.

J. C. Calderhead, Miss I. A. Carrick, A. S. Chandler, Miss S. C. Cliffon, L. E. Clothier, A. P. M. Cobley, W. R. Court, S. H. Cox, P. P. Craymer, *J. G. Dallow, G. A. Davies, D. M. Dawbarn, R. G. K. De Kretser, *G. L. Drew, *P. W. Dumpress.

B. W. East, L. Eckersall, E. J. Elliott, *L. W. Farthing, D. Fennell, †F. E. Ford, †J. G. Fryman, G. Green, D. T. Grove, *E. J. Guaschi, K. Hale, R. D. Hargreaves, *A. S. Harper, *M. J. E. Harrison, G. H. Haynes, *R. I. E. Haynes, J. H. Hayward, A. Hewanicki, D. B. Hill, *M. A. Hogg, K. H. Holgate, *V. J. Hutchings.

J. K. Inman, G. W. Jackson, *D. L. E. Jameison, *R. G. Kelsey, *C. R. Kirby, Mrs. M. W. Lamb, P. A. Lemar, *V. Levett, D. Lloyd, E. F. Logan, *F. Lound, *H. O. Luder, *G. H. McConnell, J. V. Mather, D. Mawson, *P. V. Meade, D. F. Medhurst, M. S. Milton, *K. S. Mobsby, *G. H. Mundell.

P. G. Nash, *J. H. Newman, †C. D. Ogden, C. R. D. Owtram, *E. C. Parry, *M. S. Pickard, N. F. Plastow, *A. F. Pollard, V. H. Pool, *L. E. J. Poole, H. A. Powell, A. D. Power, E. B. Power, M. E. Rice, *J. A. Ritter, *D. M. C. Roddick, †Mrs. P. Rokseth.

F. H. Saunders, J. Scaife, D. C. Scott, C. E. Shinn, *G. Spence, *A. A. Stanford, *R. A. Staughton, D. W. Stevens, *I. S. Stewart, *W. Stinson, B. E. Stride, R. T. Stride, *P. H. Stringer, K. J. A. Strowlger, *A. E. H. Sursham.

B. H. Taylor, Miss D. M. Taylor, *E. G. Taylor, R. F. Taylor, *O. E. Thompson, J. B. Thomson, *L. O. Tippins, J. A. Turnbull, *D. K. Waite, *G. D. Wardell, J. C. Ware, E. M. Watts, *L. G. White, *R. J. Whitley, †M. R. Whitworth.

* Subject to approval of Thesis.
† Distinction in Thesis.

PART 1 ONLY

R. J. Allen, A. C. Bayley, D. S. Bottomley, L. Buchwald, C. W. Caffry, A. R. Chard, R. V. Chellis, T. Crick, V. W. Crofts, M. S. Dalby, E. D. Ellison, P. A. Golding, R. Good, G. D. Hay, A. Herse, H. Heyward, D. Hindson, C. E. Hobbis, R. B. Jackson, J. Jarzabek, G. J. Jenner, Mrs. E. M. Jones-Fleming.

A. O. Kind, K. Kopernik-Steckel, R. Kowalewski, R. V. Lancashire, J. Leigh, J. Lohman, C. L. Mawson, K. Morris, M. F. H. Moss, M. C. G. Mulchinock, R. Phillips, B. Pezystal, Z. Pytel, Miss I. J. Richman, S. Rohozinski, A. Ross, D. C. Small, E. E. Sutcliffe, W. Szulman, M. Szymanski, Miss A. M. L. H. Towns, J. C. C. Warren, D. G. Williams, A. Wilson, P. B. Wright.

Special Final Examination

The special final examination was also held in seven centres from November 28 to December 7 last. Of the 348 candidates examined 97 passed (13 in part 1 only and 4 in part 2 only). 251 candidates were relegated. The successful candidates are:—

WHOLE EXAMINATION

T. E. R. Adlam, D. J. Arnold, R. Attridge, K. Barnes, E. N. Bassi, L. G. Beilby, S. L. Belfer, L. W. Brimley, A. J. Burnett, R. E. Carn, S. Carron, F. A. Chapman, L. R. Chapman, K. Chilcott, D. J. Cooper.

S. F. De'ath, D. S. Deeley, G. L. Down, N. J. S. Dunsby, N. H. Edwards, N. R. Fearey, A. G. Fletcher, J. F. Ford, J. W. Fraser, G. E. Freeman, K. G. Gibbs, F. G. Gold, J. W. Grindal, J. E. G. Halford, T. Hall, J. Hanson, G. D. Hart, V. H. Hazelwood, R. H. Henley, R. G. Hollis, C. Holt, J. C. Hunter.

J. R. F. Ithier, W. Jardine, R. Jeffrey, R. D. Johnston, F. A. Key, G. J. King, S. Krejcir, R. F. Lyons, H. H. Macdonald, R. P. Maggs, W. Martin, D. S. Maynard, D. G. Mealing, E. J. Miller, A. Morgan, W. G. Morgan, W. Morling, A. Moyes, L. P. Myers, D. C. Packer, W. C. Philpott, J. L. Pope, T. H. Pottie, G. E. Purslow.

R. E. Radway, G. W. Reichwald, N. J. Sanger, L. E. Sansome, F. H. Skinner, C. B. Smart, B. H. Strange, W. L. Sturton, E. J. Taylor, R. N. Threshire, J. B. Tomlinson, V. R. Trevor, A. E. Wallis, C. G. F. Ward, F. A. Williams, R. V. Williams, J. H. A. Wilson, J. S. Wootton, Miss C. Zentner.

PART 1 ONLY

A. A. W. Adams, H. E. Adler, D. G. Andrews, D. A. Arch, M. Bieloszejew, C. Carter, D. Dewar, C. F. Hall, G. A. K. Isted, D. W. Jeffries, D. A. G. McLeod, V. L. Rackham, W. J. T. Williams.

PART 2 ONLY

J. R. Combe, S. A. Davies, G. H. Parry, R. E. P. Taylor.

The following candidates have also passed the Special Final examination:—

A. B. Cook, J. R. Fox, R. J. Martin, S. F. Peck, N. Richardson.

OBITUARY

G. A. Lansdown, J.P., F.R.I.B.A.

We announce with regret the death, which occurred on February 2, of Mr. George Alfred Lansdown, J.P., F.R.I.B.A., of " Cobley," Dell Close, Woodford Green.

George M. Davidson, F.S.A.(Scot.)

We regret to record the death on January 24, at the age of 71, of the Scottish architect, Mr. George M. Davidson, F.S.A.(Scot.), L.R.I.B.A., of Easter Conton-road, Stirling. A native of Bridge of Allan, he was for many years a partner in the firm of Messrs. Simpson, M'Michael and Davidson, architects, Stirling. Several years ago, however, he opened an office on his own account in the town.

P. F. Gleed, F.R.I.C.S.

We regret to announce the death, which occurred on February 3, of Mr. Percival Francis Gleed, F.R.I.C.S., chartered quantity surveyor, who was a partner in the firm of Messrs. Gleeds, of 106, Regent-street, W.1.

Builders' Benevolent Institution

In submitting the 104th Annual Report of the Builders' Benevolent Institution, just published, the Committee of Management pays tribute to Mr. F. Norman Gee, their president, for the services he rendered to the Insituation. Mr. Gee died during his year of office.

THE NATIONAL FEDERATION

Building An Expanding Industry

Need for the Greater Use of Research

THE need for making greater use of the results of building research and the desirability of initiating more research on its own account were points made by the Minister of Works (MR. DAVID ECCLES, M.P.) at the annual dinner of the National Federation of Building Trades' Employers in London on January 29. The Minister was responding to the toast of "H.M. Government" proposed by the President (MR. STEPHEN HUDSON). Mr. Eccles said:

"Your President is just coming to the end of a year in office which is acknowledged by all to have been particularly energetic and successful. It was a great help to me last October, arriving a new boy if ever there was one, at the Ministry of Works to find Mr. Stephen Hudson at the head of the National Federation. In three months we have met as many times and done some good work which I know will continue under the leadership of Mr. Ian Robertson, with whom all at Lambeth Bridge House will be glad to co-operate.

"This afternoon," said the Minister, "Mr. Butler told Parliament the true facts of the financial trouble which threatens the stability of sterling and thus of our standards of life. This warning and call to action is not a story about someone else's business, of which we can take notice or not as we please. The Chancellor was talking about our own business; he was talking to all British men and women; not one of us can contract out of this financial trouble."

Whatever the reason for that trouble, there came a moment in the slide downhill when the pace accelerated and disaster could only be avoided by an exceptional effort and a complete change of direction. "That is where Britain is now. And to know what has to be done you have only to imagine your own business in the financial trouble in which your country so clearly is to-day. What would you do?" asked the Minister. "Would you shut yourself up in your office and smudge your unbalanced accounts with the tears of self-pity? Of course not. You would put on your hat, set forth, fight for more jobs and show how, by better management, a string of losses can be turned into a string of profits."

Building an Expanding Industry

That was the kind of lead which the Government would give to those ready to help pull their country out of trouble. In that salvage operation the Government placed very great reliance on the building industry because, although previous overspending forced it now to cut down in many directions, the building industry, like coalmining and agriculture, was an industry which could and should expand its output. Some less necessary kinds of building will have to be slowed down or postponed. That would make room for expansion of more important work, and there was every reason to believe that the total of work done could be increased, said Mr. Eccles, adding: "We must have more factories, more homes, more defence works and power stations. These are the foundations of recovery, and that is why building is on the short list for expansion. Greater output from our industry depends on many factors of which the supply of building materials is the most formidable; I recognise this. But we must not allow any one difficulty to become the explanation of everything."

Increasing the supply of materials called for continuous thought and hard work. He was not going to brandish a series of targets which would hit the headlines. When the goods had been delivered it would be time enough to celebrate. But there was one exception which he wanted to mention in order that builders might shape their plans accordingly. The Minister of Supply and he were aiming at a delivery rate of reinforcing rod and wire of some 350,000 tons a year. That would give a great opportunity to the industry to show how structural steel could be saved.

In the matter of bricks, we could not expect the brickyards to step up their output without orders. Therefore, confidence that the building industry had plenty of work on hand was the best way to get more bricks. "This may be an old-fashioned view, but I don't see why anyone should make a brick if he can't sell it, and if he can sell it at a profit I shall not be surprised if he doesn't make it," said Mr. Eccles. "The building industry and the Ministry of Works must so arrange the flow of contracts that you can see ahead and order bricks and other materials rather further in advance and more smoothly than has been possible. How are we going to do that? We aim at a more flexible starting-date procedure. We are arranging that the amount of work started shall be determined as we go along after consultation with the industry. We shall listen attentively to what you tell us are the local conditions in any given area. As far as housing is concerned, this will not be part of the job given to the new Housing Boards but will be an extension of the existing machinery of the Regional Committees.

"The partnership between the Government and the Building Industry has been too lop-sided. The Government has tried to do more than its share. The starting-date procedure has been too rigid; the control over the use of land too obstructive; the price controls and the central planning too irksome and arbitrary. Mr. Macmillan and I will work steadily to redress the balance in your favour. It will take time and goodwill and courage. But given these things we shall make progress.

Utilising Results of Research

"I want to give you one example of the changing partnership which I welcome very much. You are taking over from me the registration of apprentices. I am grateful that the industry is relieving the taxpayer of this modest burden. It is a step in the right direction. But, perhaps, you could go further. What about the £1,000,000 a year which the taxpayer puts up for building research? Are we getting value for money? I simply do not know. I have not yet been able to investigate this question in detail. But as a great industry, which, to-night, is entertaining the Minister of Works on a charming and generous scale, are you sure that money spent on research could be any less paying than money spent on refreshment? I hope that you, Mr. Ian Robertson,

THE NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS A.G.M.: (From left to right) R. S. Gray, President, Scottish National Building Trades Federation (Employers); Monsieur E. Frankignoul, President, International Federation of Building and Public Works; Stanley F. S. Hearder, Director, N.F.B.T.E.; Stephen Hudson, retiring President, N.F.B.T.E.; J. Ian Robertson, President-elect, N.F.B.T.E.; Wilfred Horsfall, Senior Vice-President, N.F.B.T.E.; E. W. Garrett, Junior Vice-President, N.F.B.T.E.; and G. W. Grosvenor, Junior Vice-President, N.F.B.T.E.

will consider this. Your Northern name encourages us to think that you will, as I do, myself, care for economy, and getting value for the taxpayer's money.

"I have a feeling that if we could get the taxes down, and you could keep more of your profits, and spend some of that extra on research, you and I would have made a good bargain for the nation."

In conclusion, the Minister said: "The building industry, which I am proud to work with, has the great opportunity of being marked out for expansion. By skilful management and careful use of scarce materials output can be increased without absorbing any more of the country's most precious asset—manpower. When you hold your dinner next year we shall know if we are going to succeed. The Government places its confidence in you. I am sure we shall find the response on which we are counting."

The toast of the Guests, proposed by MR. J. IAN ROBERTSON (senior vice-president), was responded to by LORD TERRINGTON.

The Annual General Meeting

THE annual general meeting of the National Federation of Building Trades Employers was held in London on January 30, with Mr. Stephen Hudson, the retiring president, in the chair. There was a lively discussion on a number of sections of the annual report, but under Mr. Hudson's able hand the business of the meeting was, nevertheless, concluded before lunch.

On the subject of materials a north-western speaker referred to arrangements whereby, he said, nationalised undertakings and local authorities were able to obtain lead at from £2 to £6 less a ton than private builders, and light castings at a reduction of up to 10 per cent. in price as compared with private enterprise. Such unfair competition should, he said, be stopped. MR. HUDSON said this was the first time the matter had been brought to his notice, and he would like to have particulars.

MR. STIMPSON (Leicester) raised the subject of the cost of the two "save-space" houses recently completed to the Ministry's design by the Market Bosworth R.D.C. He thought that some action should be taken to let all local authorities know that it was impossible at present-day costs to erect a house of some 900 feet super for around £1,000. He understood that the Market Bosworth Council had refused to divulge details of costings.

Two or three speakers criticised development charges for their alleged deterrent effect on private house-building. A delegate from South Shields hoped the Federation would press the Government to reduce the charges, or have them done away with altogether. Another speaker said that the effect of the charge was that, in the case of individual plots for individual owners, the price that had to be paid for the land was the building price plus the development charge. Unless the charge was reduced, private house-building was going to fall down.

Now that the industry was entering a better period for house-building a London delegate thought that the time had come to remove the stigma of jerry building from the industry. He thought that the criticism had been justified before the war in the case of a minority of builders, and he appealed to all builders of houses to refute the charge by coming voluntarily into the National House-Builders' Registration Council's scheme; this would serve to protect not only purchasers but the house-builders as well.

MR. C. DOUGLAS CALVERLEY (Leicester) said he would like to support what the speaker had said. Two or three years ago the Federation had decided that they should insert in their constitution that all members building houses would build up to the standards of the National House-Builders' Registration Council, but members up to now had failed lamentably in applying for registration. Registration with the Council, he suggested, was a much better way of doing away with jerry building than to have something imposed on them from outside. Mr. Calverley made a plea for the setting up of local house-building councils which, he said, could settle many difficulties.

Labour Relations and Wages

Labour relations and recent wage increases in the industry were the subject of a good deal of comment, particularly in regard to the manner in which, during the year, the Operatives' Federation and its constituent trades unions negotiated, and issued, a new joint agreement with the organisations of local authorities for the purpose of prescribing the working conditions, including sick pay, superannuation and extra paid holidays, of building craftsmen in their employ. One speaker thought the Federation had been "supine" to allow the agreement to come into force, as he alleged, without a fight.

A delegate from Southend spoke of the "growing disquiet" at local association level of the many amendments by the operatives which were dealt with at the Federation's headquarters; he thought that the rank and file of members should have more say in the conditions under which they could employ labour. SIR J. WALKER SMITH (Bolton) voiced disquiet at what he termed the "landslide" in wages since 1945, during which time the operatives had received wage increases averaging 1s. 2½d. an hour. MR. R. BLACKMORE (Bath) put forward two suggestions: (a) that the operatives be asked in the coming summer, to work an extra hour a day at normal rates, and (b) that tea breaks should either be abolished or officially recognised.

The President's Reply

In replying to these criticisms MR. HUDSON summarised them under five main heads. First, the operatives' agreement with local authorities. In this, he fully agreed, the operatives' action was contrary to their agreement with the National Joint Council. The fact was, he said, the Federation found itself faced with a *fait accompli*, but they felt so strongly about this that the "whole machinery of the N.J.C. nearly fell to the ground," and before deciding to continue to support the N.J.C. they had made it quite clear that any repetition of such action would definitely mean their breaking off. Further, they had obtained from the operatives an understanding that it was their intention, in matters of wages, that the rates agreed with local authorities should be the same as with the National Federation.

Second, on the question of time for consideration of wages and other matters by the Regions and local associations before final decisions were reached at headquarters, Mr. Hudson said they they were taking steps to "streamline procedure" in order to give plenty of time for the Regions to have their say.

Third, on the question of wage increases since the war. Here it was a "simple fact" that, whereas before the war the building industry had stood third from the top in the general level of wages, they had now fallen to something like tenth or eleventh place, and had not quite kept pace with wage increases in other industries. He believed, in fact, that in the matter of wages the Federation had kept a fair balance between employers and operatives. Fourth, on the question of tea breaks, the Council had already given the matter serious consideration; in looking at immediate problems they must not, he believed, lose sight of longer-term policy. Fifth, on the question of an extra hour's working in the summer, they would have to see what terms they could make. There would be tremendous opposition from the operatives to any suggestion for working the proposed extra hour at normal rates.

The report was accepted unanimously.

It was decided to hold the Federation's next half-yearly meeting at Malvern on July 8-10 next, on the invitation of the Midland Federation.

Among the guests present at the meeting were Mr. R. S. Gray, president of the Scottish National Building Trades Federation (Employers), and MM. E. Frankignoul and Paul Ducret, president and secretary-general respectively, of the International Federation of Building and Public Works.

After the adoption of the annual report the following officers were elected for 1952:—

The New President

MR. J. IAN ROBERTSON, F.I.O.B., president for 1952 of the National Federation of Building Trades Employers, is a director of Thomas Lowe and Sons, Ltd., Building and civil engineering contractors, of Burton-on-Trent. The firm, which has branches in London and Birmingham, was founded in 1825, and Mr. Robertson represents the fourth generation of the family to be connected with it.

Mr. Robertson, who is 45, was educated at Pembroke Lodge, Bournemouth, and Clifton College, and has a long record of service to the industry. In 1937 he was president of the Burton-on-Trent Association of Building Trades Employers and in 1939 he was elected junior vice-president of the Midland Federation, but owing to his absence during the war (he served in North Africa and Italy with the Royal Engineers and was mentioned in despatches) his election to the presidency was delayed until 1947. He was elected a junior vice-president of the National Federation in 1949 and senior vice-president in 1951. Since 1946 Mr. Robertson has been a member of the Midland Regional Joint Committee for the Building Industry and became its chairman in 1948. He is also a member of the joint advisory committee to No. 9 Region of the Ministry of Works.

The Senior Vice-President

THIS YEAR'S senior vice-president of the National Federation, Mr. Wilfred Horsfall, is a partner in the firm of Geo. Horsfall and Son, public works and general contractors, of Liversedge, Yorkshire. Mr. Horsfall, whose partner is his brother, Mr. James Horsfall, represents the third generation of the family to be connected with the firm, which was founded in 1862. Mr. Horsfall was a member of the Anglo-American Productivity Building Team which went to the U.S.A. in 1949.

The Junior Vice-Presidents

Messrs. Harvey G. Frost (Bury St. Edmunds); E. W. Garrett (London); and George Grosvenor (Bath) were elected junior vice-presidents for the ensuing year.

CANADA'S HOUSING PROBLEM

Public Schemes Found Necessary To Provide Low-rented Homes

By MAJOR JOHN G. MARTIN, MBE, Hon.AMTPI (formerly General Secretary of the National Housing and Town Planning Council)

AT the conclusion of World War II, the great Dominion of Canada found itself confronted, like most other countries, with a nation-wide housing problem of huge dimensions. Owing to the acute shortage of homes there was much serious overcrowding in every urban centre, and there were also numerous sub-standard dwellings whose substantial improvement, or else demolition and replacement, was long overdue.

Even in 1941, 150,000 households consisting of about one million persons were living in overcrowded conditions in the Dominion. The official figures for overcrowding in some of the principal towns in 1941 were as follows: Halifax, 26.1 per cent. of the population; Quebec, 31.3 per cent.; Montreal, 24.4 per cent.; Toronto, 12.4 per cent.; Ottawa, 17.4 per cent.; Sudbury, 29.6 per cent.; Winnipeg, 19 per cent.; Edmonton, 22 per cent. As regards rural areas, the 1941 Census showed that of a farming population composed of 659,000 families, 51,000 families had to share accommodation. In the smaller villages only the most primitive facilities were available. It is hardly surprising, therefore, that the cessation of hostilities brought a clamant demand from all parts of Canada for the provision of decent modern housing, *i.e.*, soundly constructed homes with proper conditions of space, sanitation, domestic convenience, and also general comfort. The situation was rendered more urgent by the arrival of some 40,000 war-brides from overseas and spectacular increases in the numbers of marriages and births.

In the past, housing in Canada has been mainly a private affair and until fairly recent times the Government has kept out of the field. The construction of houses was left to associations and private enterprise, while the Government merely passed legislation regulating such matters as the taxation of property, building standards, sanitation, etc. In 1935 the Dominion Housing Act—largely an experimental measure—authorised advances of 20 per cent. of the value of the land and 20 per cent. of the value of the building to be erected on it to be made to approved lending institutions at 3 per cent. The field of assistance was broadened by the National Housing Act of 1938 which sanctioned loans up to 90 per cent. of value on houses costing less than $2,500. Despite war-time restrictions, this latter Act had made available, by January 31, 1945, $67.5 millions for the construction of 21,414 dwelling-houses. Subsequently, as the end of the war approached, a revised National Housing Act was passed in 1944.

WARTIME BUILDING

Meanwhile it should be noted that house-building did not cease altogether in Canada during the war. To meet the needs of wartime industries large numbers of war workers were housed in new communities by Wartime Housing, Ltd., which began operations in 1941. Nevertheless, the number of completions fell considerably below the estimated annual requirement of at least 65,000 new dwellings. Thus it was stated in 1946 by Mr. C. D. Howe, the then Minister of Reconstruction, that the deficit represented by the wartime decrease in normal construction was about 150,000 housing units. Furthermore, an influential advisory committee, under the chairmanship of Professor Curtis of Queen's University, had reported to the Government in 1944 that the Dominion's minimum requirements of new houses during the decade 1946–56 would be 606,000 in urban areas and 125,000 in rural areas. In addition, the committee estimated that about 355,000 urban houses and 188,000 rural houses urgently required the execution of substantial reconditioning work. Throwing out a sharp challenge to the Dominion Government, the signatories of the report boldly declared that Canada had "lagged far behind the example of European countries, Great Britain, and the United States in providing great governmental assistance for housing as a matter of welfare and public concern."

A COMPLEX PROBLEM

Housing reformers soon realised that any attack on the problem would involve a multitude of matters: finance, methods of construction, the different sections of the building industry, the supply of materials, sale or letting, and especially the general conservatism of the public which insists on the traditional house built in the traditional style.

The initial stage in post-war housing was the provision by Wartime Housing, Ltd., of homes at low rents for war veterans who had served overseas. This company is now merged with the Central Mortgage and Housing Corporation. At first the rents varied from $21 to $35 a month, but the present range is stated to be $29 to $37 a month, according to the number of rooms. While it is difficult to ascertain the precise financial arrangements under which the houses were constructed, it is clear that the Corporation keeps each house in good and substantial repair, while the municipality concerned receives a fixed sum per house annually to cover the cost of providing land serviced with sewers, water, and electricity, and of giving educational facilities. At June 30, 1951, 31,472 dwellings had been completed for war veterans at a total cost of $179,944,000.

The National Housing Act of 1944, apart from one section which allowed the writing down at national expense of the actual value of slums redeveloped by private agencies, was entirely what the Canadians call "a pay-back-afterwards proposition." It provided facilities for Canadians who desired to purchase their own homes to obtain finance on reasonable terms by means of a "joint loan." The Central Mortgage and Housing Corporation provides 25 per cent. of the loan and an approved lending institution the remaining 75 per cent. Interest is payable at the rate of 4½ per cent. and the loan is usually made for a period of 20 years.

GOVERNMENT ASSISTANCE

Between 1946 and 1948 efforts were made to encourage speculative builders to take advantage of all the forms of credit and insurance available in the Dominion and to provide large numbers of houses for renting. The results, however, were negligible. At last, in 1949, the National Parliament and most of the Provinces passed Acts to enable the acquisition and servicing of land, and the building of houses of all types, for sale or renting, *even if it involved deficits*. It is believed that the various measures now in operation will prove to be the corner-stone of a far-reaching house-building programme. They are flexible and wide in scope and make possible the purchase and planning of large vacant tracts of land, the provision of recreational facilities and commercial space and buildings appropriate to any project, the admixture of one-family and multi-family buildings, and especially the construction of accommodation to be let at either economic or subsidised rents.

Figures showing the actual cost of building a house are always of interest to housing administrators. According to the 1949 Report of the Central Mortgage and Housing Corporation:

> The average estimated cost per unit submitted by the applicants (for loans) was $6,978 for an average unit with a floor area of 920 sq. ft. Because of the multiple nature of the construction, this was considerably lower than the national average of builders' estimated costs for bungalows built for sale or owner occupancy during 1949 which was $8,089 for 904 sq. ft.

The number of new dwellings completed in Canada each year since the end of the war has increased steadily. The figures are as follows: —1945, 42,488; 1946, 60,454; 1947, 72,218; 1948, 76,097; 1949, 88,233; 1950, 89,015. In considering these figures, however, it should be noted that the population of Canada has increased from 12,102,000 in 1945 to 14,020,000 in the first quarter of 1951. There were 124,733 marriages in 1950.

The foregoing brief review indicates that the present situation in Canada calls for continuous and determined efforts to be made by the National and Provincial Governments, by the Central Mortgage and Housing Corporation, and by every building agency to ensure the erection of large numbers of new houses as quickly as possible. Experience has proved that low-rented homes of good quality are only possible through public housing schemes. There may well be some operating losses, but the paramount considerations are the health and happiness of the people of the Dominion. In conclusion, the huge dimensions of the necessary building programme constitute a veritable challenge which must be met by reforms within the building industry itself as well as by governmental action.

CAST-IRON GOODS FOR HOUSING

"Steel Sheet No Substitute"

BELIEVING themselves to be the victims of a campaign which threatens both their essential rights and the national well-being, the Council of Ironfoundry Associations (which represents 70 per cent. of the total output of the industry) called a Press conference on January 30 to refute allegations that their industry is absorbing more than its fair share of raw materials, i.e., pig iron and scrap, at a time when there is an acute shortage of ferrous metals. In particular, the Council objected to the suggestion of the British Iron and Steel Federation (which deals only with iron for steelmaking) that it would be reasonable in 1952 to limit iron foundry output to the 1950 level of 3¼m. tons (production for 1951 is estimated at 3⅜m. tons).

MR. N. P. NEWMAN, the Council's chairman, produced figures to show that the failure of the steel industry to reach its target in 1951 was due principally to the shortage of foreign scrap and not, as alleged, to the increase in the amount of iron used by his industry. Iron foundries denied the right of the steel industry to define the rate of their expansion.

Mr. Newman continued: "The most objectionable feature of the attack on our industry from the national point of view has been the suggestion that, because sheet steel is much lighter than iron castings, we were much more wasteful in the use of pig iron and scrap than the steel industry. The instances quoted include baths, rainwater pipes, gutters and manhole covers. For example:—

"(1) In the case of rainwater and soil pipes and gutters (of which 103,000 tons were made in 1950) there is at the present time a prohibition on galvanising owing to the world shortage of zinc. As regards enamelling, we know of no available capacity to be found in this country for processing 25m. pieces of these goods, a large proportion of which are 6 ft. in length.

"(2) Pressed steel baths were produced in this country in the early post-war years; production was, however, discontinued some two years ago because public demand proved that the cast-iron bath is far more satisfactory both for the home and export markets (over 125,000 cast iron porcelain enamelled baths were exported in 1951, approximately 25 per cent. of the total production). Any attempt to substitute sheet steel would certainly endanger our goodwill in the export markets and assist Continental suppliers, who are keen competitors at the present time."

Apart altogether from these technical reasons, the Council of Ironfoundry Associations were convinced that an attempt to substitute steel sheet for iron castings on any scale—and to be effective it would have to be on a large scale—would cause acute dislocation in both the sheet fabricating industry and iron foundry industry, to say nothing of the engineering problems which would have to be solved first. Moreover, the Chancellor of the Exchequer had made it clear that the use of steel for articles in this country was to be drastically restricted, and in view of this decision it was difficult to see how these suggestions for substitution could be carried into effect even if it were possible.

"Our case rests mainly on the fact that the small expansion which has taken place in the last two or three years is due mainly to increased demand for cast-iron products for the housing programme—the most important and pressing of our social needs—railways, machine tools, textile machinery, the motor industry and for agricultural implements."

By scientific research and exact control, Mr. Newman continued, the ironfounder could make a cast-iron to-day almost three times as strong as the material produced 25 years ago. At the same time the actual amount of iron used in the various products had been considerably reduced as a result of improved design and production technique. As an example, 20 lb. of metal had been saved on the weight of a cast iron bath.

Statistics produced by the Council showed that building, including domestic appliances and fittings, and allied trades, absorbed practically 30 per cent. of the output of grey iron and malleable iron castings in 1948-51.

In reply to a question, Mr. Newman agreed that a logical way out of the dispute would be for the Minister of Supply to intervene, as only he had the right to tell them what their rate of output should be.

SOFTWOOD PRICES

Timber Control's Schedule for Canadian and Yugoslav Imports

From a Correspondent

THE most notable event in the timber trade in the past fortnight is the issue of Timber Control's schedule of prices in regard to softwood due to arrive from the Pacific Coast of Canada and from Yugoslavia. This has created a great deal of interest and comment because, with a few exceptions, the prices show an increase over the schedules issued in September and April last. There is considerable criticism in trade circles over the increases and their possible effects.

In the plywood trade, quota holders have been informed, in a notice sent out by Timber Control, that they are now free to purchase from Finnish mills plywood of the following types in standard sizes or cut sizes, or both—(a) thicknesses not exceeding 2½ millimetres; (b) panels veneered on one or both sides with decorative veneer. As far as selling prices are concerned, plywood in these specifications is outside the scope of the current Prices Order. Sales may only be made against consumption licences but these licences will, it is stated, be freely granted by Timber Control.

Some idea of the trend of events in regard to the substitution of timber for steel was gained at a Press conference called recently by the Timber Development Association when Mr. G. B. Crow, a deputy chairman of the Association and chairman of the planning committee, put forward the Association's view that removal of consumer licensing and full and active Government recognition of the possibilities of, for instance, modern methods of timber construction are essential. It was emphasised that timber was, at present, the only building material not in world shortage.

In the hardwood trade, considerable interest has been aroused by reports that the Siamese Government may soon be releasing certain species of Siamese hardwoods from the current export ban. Many of these hardwoods are used for construction purposes, sometimes in substitute for softwood.

SOFTWOOD SITUATION

Comparison of Pre-war and Post-war Imports

A COMPLETE review of the softwood situation was given by Mr. G. B. Crow, deputy chairman of the Timber Development Association, when he addressed a meeting of industrial correspondents at the T.D.A.'s headquarters recently. From his address the following facts emerge:

Over three-quarters of all the wood used in this country is imported softwood. Softwood is needed in almost every industry, but its main uses are for house building, construction work, packing cases, railway sleepers, telegraph poles, pit-props, flooring and joinery.

Our largest suppliers are traditionally Canada, Sweden, Finland and the U.S.S.R. We also import softwood from Yugoslavia, Poland, France, the U.S.A., Germany, Austria and Brazil.

The following table shows, in standards of 165 cu. ft., the quantities imported from the various countries in 1937, compared with the imports in 1951:

	1937	1951
Canada	477 000	380,000
Finland	529.000	360,000
Sweden	427,000	330,000
Poland	208,000	—
U.S.A.	—	122,000
U.S.S.R.	444 000	103,000
France	—	90,000
Yugoslavia ...	—	70,000
Brazil	—	40.000
Other Countries ...	303,000	132,000
Totals ...	2,388,000	1,627,000

Softwood imports since the war, in contrast with imports of most other raw materials, have been limited to approximately half their pre-war level, or about 1,000,000 standards per annum. Nineteen fifty-one saw a great improvement, as can be seen from the above table, when softwood imports amounted to 1,627,000 standards.

To-day, stocks of softwood in this country are estimated to amount to about 700,000 standards, of which 500,000 standards are in private hands.

Imports in 1952 will include 500,000 standards already contracted for on Government account. Private purchases by the trade may be restricted to a maximum of 600,000 standards as a means of saving foreign currency.

In 1951 the total value of imported timber of all kinds, including softwood, hardwood and plywood, was £220,584,293.

Taking the main categories of imported raw materials, timber ranks fourth in value, after seeds, nuts, oils and fats; raw cotton; and wool.

The principal timber imports in total volume during 1951 were:

Softwood ...	1,627,350 standards.
Hardwood ...	60,070,000 cu. ft.
Plywood ...	10,737,417 cu. ft.
Pitwood ...	416 975 piled cu. fathoms.

Socket-Outlets in Bathrooms

The Electrical Contractors Association advises its members to refuse to instal socket-outlets in bathrooms in any circumstances. If the work is alleged to be required for the use of a specific appliance, then the problem can be overcome in other ways, i.e., a fixed fire can be mounted on the ceiling with a cord switch; there is no point whatever in using an electric razor in a bathroom; and such appliances as hair-dryers should obviously not be used in surroundings where water can so easily provide a path to earth.

STEEL ALLOCATIONS

Amendments to Distribution Scheme

THE Minister of Supply, Mr. Duncan Sandys, has made an order authorising a number of adjustments in the iron and steel distribution scheme which came into operation on February 4.

Consumers may use the stock held at the close of February 3, for a purpose for which they hold a control authorisation.

The holder of a control authorisation may send material out on loan to be worked up for him. This amendment is designed to cover the "free-issue contract" customary in some trades for outside processing of material.

Two new items—wire rod reinforcement fabric mesh and wire reinforcement fabric mesh—are added to the list of controlled forms of steel.

The list of small quantities exemptions has been extended to permit the purchase without licence of 5 cwt. a month of these items and also one ton a month of "large spring."

The order is the Iron and Steel Distribution (Amendment No. 1) Order, 1952 (S.I. 1952, No. 172), and is obtainable from the Stationery Office (price 4d.). An "Amendment No. 1, February, 1952," to the "Notes for Consumers, January, 1952," is also being issued by the Stationery Office.

The Ministry of Supply has also announced that, as from April 1 next, the separate allocation of non-alloy steel sheet will be abandoned and that thereafter such steel sheet will, for allocation purposes, be merged in general non-alloy steel.

Consumers will be free to decide for themselves, within their total authorised tonnage, how much they wish to order in the form of non-alloy sheet steel and how much in the form of other non-alloy steel (other than tin plate, terneplate and black plate, which will remain subject to separate allocation as at present).

Outstanding sheet allocations on forms M (Sheets) will still be valid with their legal requirements unchanged.

WOODWORKERS' INSTITUTE

Inaugural Meeting at Liverpool

AT THE INAUGURAL MEETING of the Institute of Machine Woodworking Technology, held at the Liverpool College of Building on February 2, which was convened by the Principal of the College, Mr. T. E. Hall, a strong representation of woodworking technologists and administrators in the woodworking industry met to decide upon the title and objects of the institute and to elect officers. A lengthy and interesting discussion took place before the title was agreed upon.

The principal referred to the strength of the woodworking industry's demand for its own particular institute, which had been shown by the enormous correspondence which had developed from the original suggestion.

After discussion the meeting adopted the majority of the proposals which had been made in their original form, and went on to elect officers and convenors on a national basis, after which the council and admittance committee were formed. Representation on this council covers every area of the British Isles, and it is expected that the good send-off which the institute received will ensure its success and a prominent place in the recognised industrial institutes in the country.

Principal T. E. Hall was elected first president of the institute.

COLOMBO PLAN EXHIBITION

Opening by Princess Elizabeth

THE Colombo Plan Exhibition, which is being held with the object of stimulating interest in the development of South-East Asia, is to be opened on February 16 by Princess Elizabeth. The exhibition, at which the United Kingdom will be represented, is to be held at Colombo, Ceylon, and includes exhibits by a number of Commonweatlh countries.

Canada has reserved space to erect a prefabricated building to house its display. This will be of contemporary design using typical Canadian materials such as aluminium and cedar wood. The exhibits inside will be designed to show what Canada can offer in training and experience to the recipient countries of the Plan.

The Australian pavilion will occupy an area of 5,000 sq. ft. and the exhibits will tell the story of the Australian people, their culture, industry and trade. Australia's economic and technical contributions to the Colombo Plan countries will be shown.

India's exhibit will reflect what is being attempted under the Colombo Plan. Government and government-sponsored institutions, and private, commercial and industrial firms are participating. The exhibits will show India's natural resources and how far they have been developed, and will be developed, under the Government's schemes, including those incorporated in its Colombo Plan programme. Pakistan will have the largest show it has yet organised at a fair abroad. The space taken will be over 6,000 sq. ft., and displays will illustrate both resources and a wide range of activities relating to development, commerce, and social and cultural activities.

Arcon prefabricated lightweight steel structures are being used for the United Kingdom and Colonial pavilions, we are informed. The architect of the United Kingdom pavilion is Mr. Misha Black. The buildings are exported by Taylor Woodrow (Building Exports), Ltd.

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NOTIFICATION OF VACANCIES ORDER, 1952

No "Direction" of Labour

THE Minister of Labour and National Service, Sir Walter Monckton, on January 29 last, made the Notification of Vacancies Order, 1952. The Order comes into operation on February 25 next.

The Order became necessary because of the grave shortage of manpower to carry out the expansion of Britain's defence and export industries. This means that work which is in the national interest must have priority over less essential work. The Government has decided that it must ensure that all those who want to change their employment and all those who are looking for work are guided into jobs which are not only suitable for them but are also of importance to the nation.

This is the reason for the Notification of Vacancies Order. There will be no "direction" to work as there was under the old Control of Engagement Order. Workers covered by the Order are under no obligation to take jobs they do not want. All that will happen will be that they will be told of the important vacancies and asked to take them willingly. If they do not want those jobs, they will be offered vacancies in the kind of work they desire.

What the Order does

With certain exceptions the Order restricts and controls the way in which employers may (a) seek to engage any worker and (b) engage any worker who is between 18 and 65 years of age (if a man) or between 18 and 60 years of age (if a woman).

Where the Order applies, an employer must not seek to engage except by (a) notifying a vacancy to an Employment Exchange or (b) notifying a vacancy to a Scheduled Employment Agency or (c) by an advertisement that requires a worker answering it to go to an Employment Exchange or a Scheduled Employment Agency.

The Order requires engagements within its scope to be made through an Employment Exchange or a Scheduled Employment Agency.

The Order covers all kinds of work and all workers with certain exceptions, including:—part-time employment; casual work not for the employer's trade or business; employment in a managerial capacity; and employment in a professional, administrative or executive capacity.

Workers outside the Order include:—anybody under 18; any man of 65 and over and any woman of 60 and over; and any alien subject to restrictions under the Aliens Order relating to employment.

PERSONAL COLUMN

THE DIRECTORS of the Federated Employers' Insurance Association, Ltd., have announced the election of Mr. Stephen Hudson, director of Robert Hudson and Sons (Contractors), Ltd., of Sunderland, to the board of the association.

STRAMIT BOARDS, LIMITED, have appointed Mr. John Weaver, of 4, Belvedere-road, Burnham-on-Crouch, Essex, as their representative for the Eastern Counties.

THE CAPITAL OF MYTON (SCOTLAND), LTD., which was a wholly owned subsidiary of Myton, Ltd., building and civil engineering contractors, Hull, has been acquired by independent interests. In consequence of this the name of the company has been changed to Lanarkshire Builders, Ltd., and Mr. Edgar Richards has retired from the board. Mr. R. D. Stewart (chairman), Mr. S. R. Cooper, F.C.A., and Mr. W. Fleming continue as directors, having acquired a substantial interest. Mr. J. McW. Norman will continue to be in charge of building operations, and has been elected a director of the company.

CUTS IN SCHOOL BUILDING

Revised Programme for 1952-53

DETAILS of the educational building programme for 1952 were made public on February 4 by the Minister of Education, Miss Florence Horsbrugh. A statement by the Ministry of Education says that a revision of the programme has been made necessary by the need for financial economy, the steel shortage, and the temporary overloading of the building industry.

In explaining that she proposes to make the inevitable reductions without changing the statutory period of school attendance and without abandoning the expansion of technical education, the Minister has expressed confidence that with the help of authorities and teachers this can be done.

The first aim, the statement continues, must be to complete projects to the value of about £120m. now under construction. This will provide, among other things, 400,000 school places and accommodation costing about £15m. for technical education. Because these projects will use up almost all the steel available in the first half of 1952, leaving very little for new work to be started during that period, the 1951/52 programme will now be closed, and a revised programme for 1952/53 compiled from the balance of the 1951/52 and the existing 1952/53 programmes. The new programme will cost about the same as the old, but the cuts involved in carrying forward many 1951/52 projects to 1952/53 will fall more heavily on some areas than on others, and will mean postponing some jobs for which all the preparatory work has been done.

In order to concentrate resources on building new school places to cope with major housing developments and the increasing school population, current restrictions such as the ban on major projects designed to improve existing schools will be maintained, and the following changes in building policy made.

First, new, and where possible, existing secondary schools will have to house more classes than the number for which the school is designed. For example, a school with 26 teaching spaces designed for 20 classes can, with some inconvenience, take 24. Secondly, authorities are to secure the fullest possible use by older children of the places that will become vacant in primary schools after September, 1956, as the primary school roll passes its post-war peak. According to local circumstances this can be done by converting primary schools into temporary secondary schools, or by using primary school accommodation as an annexe to a secondary school, or, in particular, by postponing the age of transfer to the secondary school by not more than a year. Third, some authorities who had been planning to build new schools for their extra children will have to make do with temporary additions to existing schools or by transporting children to schools which have spare places.

Technical Education

In further education the expansion of technical education is to be continued, but as technical colleges often need much steel, the existing programmes will have to be much reduced. The new programmes are to be restricted to facilities for the more essential industries such as mining, engineering, textiles and building. There will be no new building for courses such as commerce, catering, art and printing. Authorities are also asked to reduce their building programmes by switching existing accommodation from less essential purposes even if this means closing down existing courses.

Cuts in the building programmes for other services are also announced. With certain exceptions, work at community centres, village halls, youth clubs and similar institutions must be restricted to maintenance, and a ban on the development of playing fields (other than for new schools) will be imposed on July 1.

The Minister emphasises that the shortage of steel is the main factor limiting educational building in 1952, and announces various measures designed to encourage authorities to use steel even more economically than at present.

L.C.C. EDUCATIONAL ESTIMATES

£2½m. for Building Work

LONDON County Council will be asked to spend £29,111,645 on education in 1952-53 compared with £27,888,250 in 1951-52, according to estimates that were before the education committee on February 6. The growth in day-school population is expected to continue, and provision has been made in the estimates for an average roll of 409,400 compared with the 400,000 on which rates for the current year were based.

Part of the expenditure for the acquisition of 65 sites for primary education, 33 for secondary education, seven for special education, eight for further education, and four for playing fields, is expected to be incurred in 1952-53, and £850,000 has been included in the estimates for this purpose.

The estimates include £2,500,000 for new building work on schools, etc., in the 1951-52 and earlier building programmes; for hutted accommodation; for the reinstatement of war-damage; for alterations and improvements; for the electrification of gas-lit schools and for the lay-out and fencing of two playing fields. This vote also includes £400,000 for furniture and equipment for new establishments and for developments and replacements under the five-year programme; for wireless sets and visual aids, and for additional vehicles for transport of handicapped children. £250,000 is provided for grants-in-aid towards the cost of a new "special agreement" secondary school and for works at four aided polytechnics.

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IN PARLIAMENT

Housing Allocations

On January 29 MR. DONNELLY asked the Minister of Housing and Local Government if he was yet in a position to make a statement about new housing allocations.

MR. MACMILLAN said that the Government had removed the rigid limitation hitherto put upon the national housing programme. House production would be expanded over the next three years as rapidly as resources allowed. The distribution of houses to local authorities would accord with this expanding programme. Many authorities had already been given additions to their so-called allocation for 1952. They knew that in general the more houses that were built in their area the more instalments they would receive.

Housing Subsidy

On January 29 SIR RICHARD ACLAND and other members asked the Minister of Housing and Local Government whether he would now make a statement arising out of his review of the housing subsidy policy.

MR. MACMILLAN said that the review of subsidies was in progress. He would inform the House of the new rates of subsidy proposed as soon as he could.

Housing Reconditioning

MR. VANE asked the Minister of Housing and Local Government whether he was aware of the difficulties imposed on local authorities by paragraph 4 of Circular 5/50, dated January 12, 1950, limiting the amount of house repair work and improvements which they were permitted to license; and whether he would give them greater latitude.

MR. MACMILLAN said he was considering the whole question in consultation with the Minister of Works, and hoped to give local authorities guidance shortly. (January 29.)

Temple Bar

MR. ERIC FLETCHER asked the Minister of Works what steps he had taken with regard to the proposal for bringing back Temple Bar to London.

MR. ECCLES said he had received no request from the owners of Temple Bar for permission to move this Scheduled Ancient Monument, and no steps had been taken by the Department in the matter. (January 29.)

Police Houses

On January 29 SIR DAVID MAXWELL FYFE, Home Secretary (Liverpool, West Derby, C.), moving the second reading of the Metropolitan Police (Borrowing Powers) Bill, said that it would empower the Receiver of the Metropolitan police district to borrow up to £5m. for police building, particularly for houses for married policemen and quarters for single men. The aim was to provide housing for 4,000 police.

Production of Bricks

On January 29 MR. RICHARD ADAMS asked the Minister of Works if he would make a statement upon his discussions with the industry regarding the expanded production of bricks during the current year.

MR. ECCLES said he had been in conference with representatives of the brickmaking industry, and they had jointly examined the difficulties which stand in the way of increased production. He had confidence that the enterprise and initiative of this industry, with the support and help they would be able to give, would ensure a sufficient supply of bricks for the expanded housing programme and other essential needs.

THE TOWN DEVELOPMENT BILL

Relieving Congestion of Overcrowded Areas

THE TEXT of a new Bill designed to help local authorities carry out town development in rural or small urban areas to relieve congestion elsewhere was published on February 4. The Town Development Bill, as it is known, provides for Exchequer assistance, where appropriate, towards the cost of such development.

The Bill defines town development as "development in a county district (or partly in one such district and partly in another) which will have the effect, and is undertaken primarily for the purpose, of providing accommodation for residential purposes (with or without accommodation for the carrying on of industrial or other activities, and with any public services and other incidentals needed), the provision whereof will relieve congestion or over-population elsewhere."

OFFICIAL NOTIFICATION

Pricing Plan for Non-Ferrous Metals

The Ministry of Materials has announced that, in order to facilitate the pricing of export orders by manufacturers, the following supplementary method of pricing orders for copper, lead and zinc came into effect on January 31.

As from that date, orders may be placed on the Directorate of Non-Ferrous Metals, Rugby, by telegram and, provided telegrams are handed in to the Post Office not later than 2 p.m., the orders they contain will be priced at the price ruling on the day of despatch of the telegram. A licence will continue to be necessary before a sales contract can be completed and the amounts licensed will be limited to the quotas announced from time to time and notified to individual firms. All orders placed by telegram must be confirmed by letter with the necessary supporting documents and no steps will be taken to supply the metal until such written confirmation is received. Telegraphic orders handed in to the Post Office after 2 p.m. will be priced at the price ruling on the day following the date of handing in. Orders placed by letter will continue to be priced on the day following the day of posting.

All inquiries arising out of this announcement should be made to the Directorate of Non-Ferrous Metals, 20, Albert-street, Rugby.

THE 1952 BUILDING PROGRAMME

SPEAKING at the annual dinner of the Leicester Association of Building Trades Employers, at Leicester on Wednesday, Mr. J. Ian Robertson, F.I.O.B., president of the N.F.B.T.E., said: "Our industry, which has always been one of the most important in the country, will be in the position of even greater responsibility during 1952. Ministers have recognised our special position by making it clear that, whilst cuts are to be made in many directions, the building industry is to maintain its head of labour and is expected to expand its output. Realising that the emphasis will be on the defence and housing programmes, we shall face up to the many difficulties fairly and squarely and make the fullest possible contribution towards reducing the risk of war and improving the living conditions of the people."

HOUSING PROGRESS REPORT

Figures for 1951

THE Housing Progress Reports presented to Parliament on February 5 as White Papers * by the Minister of Housing and Local Government and the Secretary of State for Scotland show that the number of permanent houses completed in Great Britain during December was 19,322 compared with 17,819 in November, 17,724 in October and with 15,950 in December, 1950.

The number of permanent houses completed in Great Britain during 1951 was 194,831 of which 171,903 were built in England and Wales and 22,928 in Scotland. The number completed in Great Britain in 1950 was 198,171. In 1949 it was 197,627.

The total number of houses completed under the post-war programme is now 1,173,495 (1,016,349 permanent and 157,146 temporary).

During December homes were provided by new building, repair of uninhabitable houses and conversion for 19,849 families, compared with 18,414 in November and 18,445 in October. This brings the total number of families rehoused by these methods under the post-war programme to 1,464,842. This total does not include homes provided in Service Camps or requisitioned properties.

SHIPS FOR THE CANADIAN TRADE

New Service to Great Lakes Ports

OF THE TWO SHIPS for the Canadian trade which were launched at the Birkenhead yard of Messrs. Cammell Laird and Co., Ltd., on January 30, one has been designed to open up a new British service to the Great Lakes ports. The ships were the Manchester Pioneer, 2,850 tons deadweight, and the Manchester Spinner, 8,900 tons deadweight.

The Manchester Pioneer has been specially constructed for the Atlantic crossing and for the navigation of the canals and locks connecting the St. Lawrence River and the Great Lakes ports during the open water season. The Manchester Spinner will trade between Manchester and Montreal in the summer and will go to Halifax and St. John's in the winter months. The vessels were built for Manchester Liners, Ltd.

* Cmd. 8458. Housing Return for England and Wales, December 31, 1951. H.M.S.O., price 1s.
* Cmd. 8459, Housing Return for Scotland, December 31, 1951. H.M.S.O., price 9d.

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NEWS IN BRIEF

Quantity Surveying

Mr. R. C. Robinson, A.I.O.B., A.I.Q.S., has set up in practice as a quantity surveyor and estimator at 36, Studley-drive, Ilford, Essex (tel.: Valentine 2513).

Brick Production in North-West

North-West brickworks turned out 8m. more bricks last year than in 1950, the total output being 675m. It is hoped this year to increase monthly production from 56½m. to 60m.

Patent Office Hours of Opening

It has been decided to continue the extended hours of opening of the Patent Office Library at 25, Southampton Buildings, Chancery-lane, W.C.2. The hours are 10 a.m. to 9 p.m. Monday to Friday and 10 a.m. to 5 p.m. Saturday.

Industrial Furnace Construction

A series of ten lectures dealing with "Industrial Furnace Construction" held weekly on Thursday evenings at 6.45 p.m. at the Rotherham College of Technology, began on January 24. The fee for the course is 10s. Particulars from the Principal, College of Technology, Howard-street, Rotherham.

Shorter Hours Protest

Southport Corporation Finance Committee is to protest to the Whitley Council against their decision to reduce the working hours of building trades and civil engineering craftsmen from 46½ hours a week to 44 hours, especially during the summer season. Ald. H. W. Barber, chairman of the committee, states that the effect will be to increase building costs by £30 a house.

Dow Memorial Prize

As a memorial to John Stewart Dow, the Illuminating Engineering Society is to hold the first Dow Prize competition. The competition is intended to increase collaboration between students of illuminating engineering and students in other fields in which applied lighting plays an important part. Particulars from 32, Victoria-street, S.W.1.

TRADE NEWS

Carron Cupola

The January edition of Carron Cupola, the magazine of Carron Co., Carron, Falkirk, Stirlingshire, contains an article on the Twin Fluidrive A.C. Manne Winch by William Thomson, M.I.Mech.E., the firm's engineering department manager, together with items of news from the various activities connected with the firm.

Design of Welded Structures

Following the four design courses which were held successfully last year by the Quasi-Arc Co., Ltd., two further courses on the "Design of Welded Structures" have now been arranged by the company and will be given at their works at Bilston, Staffordshire. The first course will be a series of evening lectures with practical demonstrations, intended for designers and draughtsmen from the Midlands, and will commence on February 19 next. Lectures will be given every Tuesday and Thursday up to Thursday, April 3 next.

The second course will be full-time for one week commencing on May 5, and will include, in addition to the lectures, practical tuition in arc-welding, visits to local engineering firms and tours of the Quasi-Arc electrode factory and laboratories. Details from the company's constructional design department, at the above address.

THE SCOTTISH BUILDER

Means for Securing Expansion of Housing Programme

A CIRCULAR (No. 10/1952) issued to local authorities by the Department of Health for Scotland states that the Secretary of State has reviewed the present state of the Scottish housing programme, and the Department will shortly send letters to individual local authorities, authorising them to build more houses in their areas. The number authorised in each case, whether higher or lower than last year, has been determined to a large extent by the progress which the local authority have recently made with their current schemes.

The Secretary of State desires that the programme should be expanded to the utmost extent that the available building resources will allow. The Government are doing everything they can to increase the supply of building materials for this purpose. But if there is to be any worth-while expansion, the full co-operation of local authorities and the building industry is essential. He asks each local authority, therefore, to examine their programme in detail and to consider what steps they can take to increase output as rapidly as possible. To facilitate expansion he has decided to make the present arrangements for authorising additional houses more flexible. The Department will make additional allocations in the course of the year, where it is clear that sufficent progress has been made to justify this course. The Secretary of State will, for this purpose, keep the progress in the areas of individual local authorities under constant review.

Points which the Secretary of State would invite the local authorities to consider are:—

(a) The more speedy submission of tenders. (Some local authorities have not yet submitted tenders for some of the houses in their last allocation.)

(b) The need for phasing their programmes to avoid overburdening the building industry and to maintain a continuous flow.

(c) The need for obtaining and servicing sites well in advance.

(d) The advantages of selecting house types which are capable of speedy erection and make a minimum demand on the supply of scarce materials. (Experience shows that non-traditional houses can be built much more quickly than traditional houses.)

(e) The advantages in present circumstances of building to low cost designs, which can be used either for traditional or non-traditional houses; and

(f) The early issue of licences to private builders. (The attention of local authorities is drawn to what is said in Circular No. 124/1951 about block licences.)

It will materially assist the expansion of the housing programme if local authorities include a substantial proportion of non-traditional houses in their schemes and, as in previous years, the Secretary of State asks that authorities should arrange for at least 50 per cent. of the houses being of non-traditional type. Small authorities should keep in mind, however, that normally a non-traditional scheme should not be for less than 20 houses.

Local authorities are free to use up to a maximum of one-fifth of their "general needs" allocation for private building. With the intimation of the new allocations, local authorities will now be able to issue licences to private builders in accordance with the recommendations in D.H.S. Circular No. 124/1951.

The Secretary of State proposes shortly to send a separate circular to local authorities about the proposed timber house scheme referred to in the Department's circular of December 4 last (No. 127/1951). The total allocation for Scotland is about 25,500 houses, of which just over 21,000 will go to local authorities and the Scottish Special Housing Association.

Annual Awards to Builders

THE SUGGESTION that Scottish contractors for roads, drainage, hydro-electric development, playing fields, aerodromes and other projects should pool resources in material, equipment and personnel to speed up the completion of important works, was made by SIR PATRICK DOLLAN, chairman of the East Kilbride Development Corporation, speaking at the annual dinner of the Scottish Plant Owners' Association, in Glasgow.

BUILDING TRADE WAGES IN SCOTLAND

Following are grade rates authorised by the Scottish N.J.C. from February 4, 1952. Every effort is made to ensure accuracy, but we cannot be responsible for errors that may occur.

Grade Classification . A Craftsmen ..... 3/4½ Labourers 2/11

Aberdeen .....A	Dumfriesshire .....A	Inverness .....A	Peterhead .....A
Ayrshire .....A	Dundee .....A	Inverurie .....A	Renfrewshire .....A
Banff .....A	Dunoon .....A	Kincardineshire .....A	Rothesay .....A
Berwickshire .....A	East Fife.....A	Kinross-shire.....A	Roxburghshire .....A
Bridge of Allan .....A	East Lothian .....A	Lanarkshire .....A	St. Andrews .....A
Broughty Ferry.....A	Edinburgh .....A	Midlothian .....A	Selkirkshire .....A
Clackmannanshire .....A	Fifeshire.....A	Monifieth .....A	Stewartry .....A
Doune .....A	Forfarshire .....A	Moray and Nairn.....A	Stirlingshire .....A
Dunblane .....A	Glasgow.....A	Newport .....A	Stornoway .....A
Dunbartonshire .....A	Greenock .....A	Peeblesshire .....A	Tayport .....A
Dumfries .....A	Hamilton .....A	Perth .....A	West Lothian .....A
		Perthshire .....A	

The Scottish N.J.C. award on which this is based provides for variation to current rates of Female Labour, Apprentices and Trainees' wages.

The information given in this table is copyright.

There need be no fear of unemployment in the general contracting and building trades for the next 15 or 20 years, because the present target for housing, roads and allied works represented a total expenditure at present prices of almost £1,000,000,000.

The Scottish Building Group, which represented a number of firms, continued Sir Patrick, had proved the value of co-operation and had completed more than 5,000 houses for local authorities and the Government last year, and he was confident that general contractors, by adopting co-operation and team methods, could make a similar contribution to the public works programme. He was glad to learn that the Scottish Plant Owners' Association had been formed to promote work on these lines.

NEW BUILDINGS

Brachead.—Lanarkshire C.C. to have new sewage works scheme carried out at an est. cost of £21,000, for which the architect is Col. James Murray, M.Inst.C.E., County-chbrs., Beckford-st., Hamilton.

Eddlewood.—Lanarkshire C.C. to have plans prepared for scheme of new houses and police station to be erected at William-dr. The architect is Mr. Samuel MacColl (E.), County-chbrs., Beckford-st., Hamilton.

Eyemouth.—Trustees of Harbour propose construction of reinforced concrete refacing wall, etc., at Saltgreen's Quay.

Fife.—C.C. propose extensions at Buckhaven mining school, comprising machine room, science laboratory, drawing office, gymnasium, staff office, etc.

Glasgow.—Plans in the hands of their own architects for new office buildings which R. S. Logan & Co., Ltd., are to erect at 120-125, Whittinghame-dr., Great Western-rd., Glasgow, W.C.4.

Glasgow.—Plans in the hands of their own architects for new office buildings which Shaw (Glasgow), Ltd., are to erect at Craigmeont-st., Shaw Park, Glasgow, N.E.

Glasgow.—Plans in hand for additions and alterations to the Woodville-st. factory of The Lambhill Ironworks, Ltd., Strucher-st., Lambhill, Glasgow, N.W.

Glasgow.—Plans to be prepared for extensions and other additions at The Langside College, for which the architect is John MacNab (F.), 129, Bath-st., Glasgow, W.C.2.

Glasgow.—Plans in hand for new factory to be erected for The Arc Manufacturing Co., Ltd. The architect is Alexander G. Glen, 102, Bath-st., Glasgow, W.C.2.

Glasgow.—Plans are in the hands of their own architects for new canteen to be constructed at a site in Pollockshaws, by Compressors Services, Ltd., 200, Shawbridge-st., Glasgow, S.3.

Glasgow.—A new pumping station has been authorised at Croftfoot-rd., Castlemilk, for which an immediate starting date has been given. The Water Department is compiling a list of contractors to cover all aspects of the construction.

Greenock.—Plans to be prepared for new three-storied building for female hostel to be erected at Westburn-sq. The architect is Robert L. Rankine, A.M.T.P.I., A.M.Inst.C.E., Municipal-chbrs., Wallace-sq., Greenock.

Kilmarnock.—T.C. to erect block of 12 houses for old people at Springhall Eventide Home site to cost £11,374.

Kilmarnock.—Dean of Guild Court has granted permission to Scottish Gas Board for proposed building of extension to Riverbank gasworks at a cost of £51,980.

Lanarkshire.—Rutherglen Corporation to have plans prepared for a scheme of 17 four-apartment terrace houses which will be erected at the Stonelaw housing site. The architect is J. C. Russell, Municipal-chbrs., Main-st., Rutherglen.

Lanarkshire.—Hamilton Corporation to have plans prepared for a scheme of 48 terrace houses to be erected at a cost of £92,000 at the Ulster-Hillcourt housing site. The architect is J. A. White (F.), Municipal-chbrs., The Cross, Hamilton.

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PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

FEBRUARY 11.

***†Hornsey B.C.**—22 flats on two sites. G. A. Pentecost, B.E. & S. Tenders by March 10.

FEBRUARY 13.

***†Torquay B.C.**—36 flats, Sherwell Valley estate. B.E. & S. Dep. £5 5s.

FEBRUARY 14.

***†Birmingham T.C.**—Conversion into home to provide residential accommodation, 90, Gillott-rd., Edgbaston. H. J. Manzoni, City E. & S. Dep. £2 2s.

***†Gateshead C.B.**—58 houses, "The Cedars," Durham-rd., Low Fell, and 212 houses and flats, Wrekenton. H. J. Cook (A.), Chief A. Dep. £3 3s. and £5 5s. Tenders by March 13.

FEBRUARY 15.

***Tottenham B.C.**—Eight flats and 12 maisonettes, Lawrence-rd., N.15. B.E. & S. Dep. £2 2s.

FEBRUARY 16.

***†Essex C.C.**—Hutted classrooms at prim. sch., Pitsea. H. Conolly (F.), County A., Chelmsford.

***†Essex C.C.**—Hutted classrooms at Chingford, Yardley-la. sch. H. Conolly (F.), County A., Chelmsford.

***†Southampton C.B.**—External repairs, Mount Pleasant sec. sch. Boro' A. Dep. £1.

FEBRUARY 18.

***Bedfordshire E.C.**—Construction of sec. mod. sch. at Ampthill. County A.

***Romsey and Stockbridge R.D.C.**—34 dwellings. W. A. Tanner, Clerk. Dep. £3 3s.

FEBRUARY 19.

***Birmingham T.C.**—96 flats, Great Francis-st., and 18 flats, Windsor-st. H. J. Manzoni, City E. & S. Dep. £2 2s.

***†Bromley B.C.**—Prim. sch. at Pickhurst-la. B.E. Dep. £2 2s.

***†Surbiton B.C.**—12 old persons' bungalows and six two-storey flats. T.C.

FEBRUARY 20.

Darlington C.B.—Alterations to transport depot at Haughton-rd. B.A., Central-bldgs. Dep. £1 1s.

East Elloe R.D.C.—Ten bungalows at Gedney Dyke housing site. K. Atkinson, architect, Mathinone-hse., Holbeach. Dep. £2 2s.

***†Essex C.C.**—R.C. sec. sch at Dagenham. H. Conolly (F.), County A., Chelmsford.

***Reigate B.C.**—27 houses and outbuildings, Rushetts Farm estate. B.E. & S. Dep. £3 3s.

Truro R.D.C.—32 houses at various sites. T. H. Snellgrove, 26, Coinagehall-st., Helston. Dep. £2 2s.

***Worcester T.C.**—16 maisonettes and flats, Newtown No. 2 estate. City E. & S., 22, Bridge-st. Dep. £3 3s.

FEBRUARY 21.

Canvey Island.—Ten bungalows at Long-rd. site. E. & S., Council Offices. Dep. £1 1s.

***Darlington C.B.**—70 houses on three sites. Boro' A., Central-bldgs. Dep. £1 1s.

***Winchester T.C.**—12 houses, Weeke estate. A. S. Wilson and Partners, chartered quantity surveyors, 3, Princes-st., Storey's Gate, Westminster, S.W.1. Dep. £2 2s.

FEBRUARY 22.

Poole T.C.—150 houses (four contracts) at Waterloo estate. B.E., Municipal-bldgs. Dep. £2 2s. (each contract).

FEBRUARY 23.

Adwick-le-Street U.D.C.—220 houses (seven contracts) at Woodlands housing scheme. E. & S., Council Offices. Dep. £1 1s. (each contract).

Brightlingsea U.D.C.—Ten houses at Chapel-rd. housing estate. S., Town Hall. Dep. £2 2s.

***Northampton C.B.**—39 flats at King's Heath. Boro' A. Dep. £2 2s.

FEBRUARY 25.

Basford R.D.C.—350 houses (eight groups) at three sites. I. J. G. Ellis, Rock-hse., Stockhill-la. Dep. £3 3s. (each contract).

Billingham U.D.C.—22 houses at Roseberry-rd. housing site No. 4. Kitching & Co., 21, Albert-rd., Middlesbrough. Dep. £2 2s.

***Dagenham B.C.**—Hall, junction of New North-rd. and Harbourer-rd., Hainault. B.E. & S. Dep. £2 2s.

***Exmouth U.D.C.**—Alterations and additions to refreshment kiosk at Orcombe Point. R. J. Humphreys, E. & S. Dep. £2 2s.

New Sarum T.C.—28 flats on the Bemerton Heath housing estate, Salisbury. City E., The Council House, Bourne Hill, Salisbury. Dep. £2 2s.

Pewsey R.D.C.—Four houses at North Newnton. E. & S., Council Offices. Dep. £1 1s.

***Rhondda U.D.C.**—Six flats, etc., Station-rd., Treherbert. C. Gingell (A.), 13, Ystrad-rd., Pentre.

FEBRUARY 26.

***Skegness U.D.C.**—38 houses, St. Clement's housing estate (2nd section). S. Dep. £3 3s.

FEBRUARY 27.

***Cardiff T.C.**—County prim. sch., Llanishen. S. T. Tapper-Jones, T.C. Dep. £2 2s.

***Tonbridge U.D.C.**—60 houses at Cage Farm estate. E. & S. Dep. £3 3s.

FEBRUARY 28.

***Huntingdon R.D.C.**—Two pairs of houses and one pair of bungalows, Sawtry. K. A. Milner (L.), 4, Market Hill. Dep. £2 2s.

FEBRUARY 29.

***Berks C.C.**—Two senior police officers' houses, St. Leonards Hill, Windsor. County A., Wiltonnse., Parkside-rd., Reading. Dep. £2 2s.

***Bootle C.B.**—40 dwellings at Sterrix-la. site. B.S. Dep. £2 2s.

***Croydon C.B.**—Two-classroom block and sanitary annexe at Woodside sch., Morland-rd. Chief Education Officer, Katherine-st. Dep. £1.

***Durham C.C.**—Pair of police houses, Cellar Hill estate, Lewbottle. G. R. Clayton (F.), Court-la.

***Durham C.C.**—Ambulance station, Washington. G. R. Clayton (F.), County A., Court-la.

***Durham C.C.**—Pair of police houses, Moorsby-rd., Low Moorsby. G. R. Clayton (F.), Court-la.

***Waltham Holy Cross U.D.C.**—12 garages at Princesfield estate. S.

MARCH 1.

***St. Albans R.D.C.**—48 dwellings at Sheephouse Farm estate, London Colney. Architect, 43, Upper Lattimore-rd. Dep. £2 2s.

MARCH 3.

***Camberwell B.C.**—Pre-fabricated building for public library, Peckham Hill-st. J. Clapp, B.E. & S. Dep. £2 2s.

MARCH 4.

***Aylesbury R.D.C.**—20 houses on three sites. R. C. White (F.), 4, Temple-sq. Dep. £2 2s. (each).

MARCH 6.

***Lincoln (Lindsey) C.C.**—First stage of sec. mod. sch. at Tattersall. Denis Clark Hall (F.), 6, Mason's-yard, Duke-st., St. James's, London, S.W.1.

MARCH 7.

***Aireborough U.D.C.**—Conveniences, Albert-sq., Yeadon. E. & S. Dep. £1 1s.

***Harrow U.D.C.**—Alterations and additions to school buildings. J. H. Melville Richards, Cottesmore, Uxbridge-rd., Stanmore, Middlesex. Dep. £2.

***North Riding E.C.**—Infants' sch., Eston, nr. Middlesbrough. A. K. Tasker and Austin Child, architects, 25, New Bridge-st., Newcastle-on-Tyne.

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MARCH 8.

***Great Yarmouth C.B.**—Erection of Peterhouse jun. sch., Gorleston. F. Jackson (A.), 15, Regent-st. Dep. £2 2s.

MARCH 10.

***Cuckfield R.D.C.**—20 dwellings, Bolney. A. Hutchings, E. & S. Dep. £2 2s.

***Luton B.C.**—60 houses at Ramridge housing estate. B.E. Dep. £2 2s.

MARCH 11.

***Eton U.D.C.**—Pair of houses and 8 flats, Tilston Field site, Eton Wick. E. & S. Dep. £2 2s.

MARCH 17.

***West Riding C.C.**—Phase two of Castleford Airedale County Jun. Sch. County A., Bishopgarth, Westfield-rd., Wakefield. Dep. £2 2s.

NO DATE.

***East Riding C.C.**—List of contractors for inclusion in revised list. County A., Beverley.

***Tunbridge Wells B.C.**—38 dwellings, Sherwood estate. H. P. Bishop, B.S. & Water E. Dep. £2 2s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

FEBRUARY 16.

Barnet U.D.C.—E. & S. (Materials.)

FEBRUARY 18.

Frinton and Walton U.D.C.—E. & S. (Materials.)
Sunderland C.B.—B.E. (Materials.)
Worthing B.C.—B.E. (Materials.)

FEBRUARY 20.

East Riding C.C.—C.S. (Materials).
Lincoln T.C.—City E. & S. (Materials.)

FEBRUARY 22.

Rayleigh U.D.C.—E. & S. (Materials.)
Lowestoft B.C.—B.E. & S. (Materials.)

FEBRUARY 23.

Berkhamsted U.D.C.—E. & S. (Materials.)
Bognor Regis U.D.C.—E. & S. (Materials.)
Littleborough U.D.C.—E. & S. (Materials.)
***Sunderland C.B.**—1,000 "Ideal" Neofires with surrounds and 2,000 radiators and fittings. Boro' A., Grange-hse., Stockton-rd. Dep. £2 2s.

FEBRUARY 29.

***Bootle C.B.**—Roof tiling, asphalt flooring and plastering 16 dwellings, Sterrix-la. site. B.S.

MARCH 3.

***Liverpool T.C.**—Painting various premises, Rivington estate. Water E., 55, Dale-st.

ROADS, SEWERAGE AND WATER WORKS

FEBRUARY 18.

†Romford B.C.—Roads and sewers at Crow-la. industrial site. B.E., Town Hall. Dep. £2 2s.

FEBRUARY 21.

Yeovil R.D.C.—Sewerage and sewage disposal scheme at Haselbury Plucknett. C. A. Wilson, surveyor, 26, Kingston, Yeovil. Dep. £2 2s.

FEBRUARY 25.

Exmouth U.D.C.—Site works on the Salterton-rd. housing estate. E. & S., Templetown Lodge, The Esplanade, Exmouth. Dep. £5 5s.

MARCH 10.

***Cuckfield R.D.C.**—Laying of one mile stoneware pipes, construction of 22 manholes and sewage disposal works. A. Hutchings, M.B.E., M.I.Mun.E., E. & S. Dep. £2 2s.

GENERAL BUILDING WORK

(LONDON)

Aveley.—AREA OFFICE.—L.C.C. Housing Committee have approved plans for two-storey building with a four-room house at each end on the council's Aveley housing estate. Plans by Housing Architect, under the direction of the Director of Housing and Valuer.

Croydon.—ADDITION TO OFFICES.—Ariston Alloys, Ltd., have received town planning permission for proposed addition to foundry and offices at Mill-la.

Croydon. — RECONSTRUCTION. — Powers - Samas Accounting Machines, Ltd., West Croydon, have received town planning permission for proposed reconstruction of offices at Aurelia-rd.

Edmonton.—FACTORY EXTENSIONS.—Rayner & Co., Ltd., Commercial-rd., propose erection of factory extensions.

Fulham.—WAR DAMAGE REPAIRS.—L.C.C. Education Committee have approved plans by Howard V. Lobb & Partners, F./A.R.I.B.A., 20, Gower-st., W.C.1, for war damage repairs and redecoration at Peterborough county primary school.

Hendon.—FLATS AND HOUSES.—Plans have been prepared by Boro' Engineer and Surveyor's Dept. for proposed erection of 255 dwellings at Broadfields-ave. (three contracts).

Hendon.—HOUSING SCHEME.—B.C. Housing Committee propose to build 40 flats at Cricklewood-la. Plans by Architect's Section, Boro' Engineer and Surveyor's Dept., Town Hall.

Hendon.—HOUSING SCHEME.—B.C. Housing Committee proposes erection of 61 flats and houses at Northway Circus. Plans by Welch and Lander, F./F.R.I.B.A., 38, Gloucester-pl., W.1.

Kensington.—REBUILDING.—Plans have been prepared by Nicholas and Dixon-Spain, F./F.R.I.B.A., 19, Hanover-sq., W.1, for rebuilding St. Charles's R.C. primary school.

Lewisham.—REBUILDING.—Preliminary plans by T. F. Ford, F.R.I.B.A., 189, Victoria-st., S.W.1, for rebuilding Christ Church School at an estimated

cost of £43,970, have been approved by L.C.C. Education Committee.

Morden.—BUILDING WORK.—Plans by Douglas White and Furniss, A./A.R.I.B.A., 147, Cheapside, E.C.2, for construction of pavilions, three staff houses, etc., at Morden Park, have received L.C.C. Education Committee approval.

Ruislip.—WORKSHOPS.—Middlesex C.C. to build fire and ambulance workshops at South Ruislip to cost £150,000. Plans by County Architect, 10, Great George-st., S.W.1.

St. Marylebone.—NEW SCHOOL.—Preliminary plans by Louis de Soissons and Partners, A.R.A., F./A.A.R.I.B.A., 3, Park Square Mews, N.W.1, for erection of Barrow Hill-rd. county primary school, at estimated cost of £51,630, have been approved by L.C.C. Education Committee.

St. Paul's Gray.—SHOPPING CENTRE.—L.C.C. Housing Committee has approved plans for second block to complete major shopping centre at Cotmandene-cres., comprising five multiple stores with 17 maisonettes above. Plans by Housing Architect, under the direction of the Director of Housing and Valuer.

Somerset House.—RAILINGS AND GATE.—Ministry of Works to undertake the provision of railings and gate at Somerset House to plans approved by Sir Giles Gilbert Scott, F.R.I.B.A., 3, Field Court, Gray's Inn, W.C.1, and at the expense of L.C.C.

Streatham.—REPAIRS AND ADAPTATION.—L.C.C. Education Committee have approved plans for repairing and adapting Furzedown Training Further College to provide facilities for drama work at an estimated cost of £5,470. Plans by council's architect's dept.

Waterloo Bridge.—BALUSTRADING.—L.C.C. have approved plans by Sir Giles Gilbert Scott, O.M., R.A., F.R.I.B.A., 3, Field Court, Gray's Inn, W.C.1, for provision of permanent balustrading and parapet lamp standards for Waterloo Bridge.

(PROVINCIAL)

Bexhill-on-Sea.—Boro' S., A. E. Geldard, has prepared plans for 36 dwellings at Southlands-rd.

Blackpool.—B.C. approve conversion of Hotel Metropole as flats, restaurant, etc.

Bolton.—B.C. approved plans for extensions to college at Thornleigh College, off Sharples Park; six houses at Craighall-rd., for E. Gleaves; 38 dwellings off Queen's-rd.; and 46 at Lightbounds-rd. and Gisburn-ave., Johnson Fold No. 2 estate (Section 2), for B.C.

Bury.—E.C. propose new biology laboratory at Bury High sch.—T.C. approved extensions to printing dept. at Bolholt Bleachworks, for Horridge & Cornall, Ltd.; and garage and repair shop at Bambury-st., for Auty & Lees, Ltd.

Canterbury.—City A., L. H. Wilson, Municipal-bldgs., Dane John, has prepared plans for 62 houses at London-rd. site.

Clowne.—R.D.C. to build 44 houses at Creswell and Whitwell. Plans by J. Haslam & Sons, Rytonchbrs., Newcastle-ave., Worksop.

Consett.—U.D.C. to build 120 houses. Architect is J. J. Eltringham, Derwent-st., Blackhill, Consett, Co. Durham.

Coventry.—Proposed new premises for Coventry & District Co-operative Society, Ltd. Architect's dept., 1, Balloon-st., Manchester.—Metcalfe Equipment, Ltd., propose erection of new factory at Exhall.

Cumberland.—Cumberland & Westmorland Joint Agricultural Com. seek Ministry approval for modified scheme for extensions to Newton Rigg Farm sch., at est. cost of £24,000.

Cumberland.—C.C. to carry out alterations to county library headquarters at Portland-sq., Carlisle, to plans by Cty. A., 15, Portland-sq., Carlisle.

Denby Dale.—U.D.C. approved two-bay fire station at Skelmanthorpe, for West Riding C.C.

Dewsbury.—South-Western Salvage Trading Co., 41, Watergate-rd., propose extensions to works.

Gateshead.—T.C. has instructed Chief A., H. J. Cook, to prepare plans for erection of police houses on suitable sites.—T.C. seek loan sanction of £162,516 for erection of 109 houses; and £24,042 for stage two of Tech. Col. scheme.

Gosforth.—U.D.C. has approved proposals by Cussins (Contractors), Ltd., The Drive, Gosforth, for erection of houses for private licence holders between Church-ave. and St. Nicholas-ave.

Grays.—H. Conolly, F.R.I.B.A., Essex Cty. A., County Hall, Chelmsford, has prepared plans for proposed fire station and divisional headquarters, for Essex Fire Com.

Hebburn-on-Tyne.—U.D.C. S., R. C. Bestow, has prepared preliminary plans for development of land at Prince Consort-rd., providing for 72 terrace-type houses.

Higham Ferrers.—George Morris & Son, Ltd., propose erection of new premises at Warmonds Hill.

Ilkeston.—Beardsley & Wisdowson, Ltd., propose to build factory extensions at Larklands-ave. Plans by J. A. Simcock, A., Kewstoke, Quarry Hill-rd.

Lanchester.—J. G. Cowe & Son, Central-chbrs., Chester-le-Street, Co. Durham, are the architects for proposed new inn at Burnhope, for Elizabeth G. Blake.

Leeds.—City A., Priestly-hse., Quarry Hill, 9, has prepared plans for ambulance station at Saxton-la., to cost £60,150.

Liverpool.—Alterations to factory at 39, Sefton-st., for G. H. Lee, architects are John Lewis Partnership, 70, Wigmore-st., London; and rebuilding transit sheds at Pall Mall, for Liverpool Warehousing Co., architect is W. Lewis, 34, Castle-st., Liverpool.

"THE BUILDER" PRICES

REDUCTIONS FOR LEAD

The Ministry of Materials announces that from February 1 the price of imported good soft pig lead was decreased from £175 to £170 per ton delivered consumers' works. The Ministry of Supply will make a separate announcement about the controlled price of scrap.

LEAD PRODUCTS

Following the decrease to £170 per ton in the Government-controlled price of lead as announced by the Ministry of Supply, Associated Lead Manufacturers, Ltd., have issued the following new basic prices of their lead products, which were effective from February 1.

	Basis Price per ton. £	s.
Genuine English Dry White Lead (basis in 1 × 8-cwt. cask)	196	10
Genuine Ground English White Lead (basis in 1 × 5-cwt. cask)	214	0
Genuine Refined English Red Lead (basis in 1 × 5-cwt. cask)	189	10
Genuine English Powdered Litharge (basis in 1 × 5-cwt. cask)	189	10
Genuine Refined English Red Lead Ground in Oil (basis in 1 × 5-cwt. cask)	212	0
English Sheet Lead (basis for 2-ton lots)	194	0
English Lead Pipe (basis for 2-ton lots)	195	5
English Lead Shot (basis for 1-ton lots)	201	0

The above prices are subject to withdrawal and alteration without notice.

Macclesfield.—T.C. approved erection of new licensed premises, "Brocklehurst Arms," at Manchester-rd., Tytherington, for Walker & Homfrays, Ltd.

Manchester.—T.C. propose new swimming baths at Sharston, at est. cost of £160,000.—E.C. propose extensions to Mobberley Hall Home for Children. Electro Refined Irons, Ltd.; W. Kilbride & Sons, Ltd.; and Tie Weaving Industries, Ltd., Blackburn, propose to build new factories at Wythenshawe estate. Architects are Drury & Gomersall, 15, Oxford-rd., Manchester.

Newcastle-on-Tyne.—Fennell & Co., Architects, Bridge End-chbrs., Chester-le-Street, have prepared plans for reinstatement of fire damage and erection of additional storey to premises in City-rd., for E. Newton.

Northumberland.—N.C.B. propose to build community centre at Nelson Village for Miners' Welfare Commission. Plans by N.C.B. Architects' Dept., Ashfield Towers, Gosforth, Northumberland.

Nottingham.—Forest Football Club propose improvements to ground and erection of new double-decker stand, at est. cost of £60,000.—T.C. to erect 300 houses at Bramcote-la. estate.

Nuneaton.—B.C. Housing Com. have approved layout plan by Boro' S. for proposed 12 old persons' bungalows, 20 two-bedroom houses, 190 three-bedroom houses and 22 four-bedroom type houses at Camp Hill.

Otley.—U.D.C. to build 16 houses at Weston-la. and 24 flats at Fairfax-st.

Plymouth.—Spooner & Co., Ltd., Tavistock-rd., propose plans for departmental store, restaurant and theatre.

Portsmouth.—A. G. Roberts, A., 76, Wimpole-st., W.1, has prepared plans for proposed twin operating theatres at St. Mary's Hospital.

Salford.—Rebuilding proposed at the Palace Theatre, for J. Brennan.

Salford.—T.C. seek M.H. & L.G. sanction to loan £233,200 for erection of new police headquarters at Crescent.

Sheffield.—B.C. approved layout for first three development schemes at Hackenthorpe estate, providing for 1,114 houses.

Sherburn Hill.—Durham Coal Board (No. 4 Area), Coundon, Bishop Auckland, to erect coal-washing plant, at est. cost of £250,000.

Southport.—T.C. has received loan sanction of £72,048 for erection of 50 houses at Heathfield-rd. No 15 site.

South Westmorland.—R.D.C. propose 10 houses at Burton, 30 at Staveley, 10 at Levens, four at Kirkby Lonsdale and two at Hugill.

Stockport.—Thos. Storey (Engineers), Ltd., propose new factory and offices at Heaton Mersey.—B.C. propose branch library at Brinnington neighbourhood unit.

Surrey.—Cty. A., Kingston-on-Thames, has prepared plans for administration block at Egham cty. sec. sch., to cost £240,000, and extensions to Hackbridge cty. sec. sch., to cost £17,010.

Sutton-in-Ashfield.—Warner & Dean, architects, Mansfield-rd., have prepared plans for 25 flats and maisonettes at West End site, for U.D.C.

Swansea.—Wildings (1911), Ltd., St. Mary-sq., propose erection of showrooms and offices at Oxford-st.

Uttoxeter.—U.D.C. approved development of site between The Firs and Rose Cottage, Derby-rd., as depot for Shell Mex and B.P. Co., Ltd.

Wakefield.—B.E.A. have received approval from Ministry of Fuel and Power for proposed erection of new generating station to cost between £12m. and £13m.

West Riding.—C.C. recommended to approve 1952/3 schools programme:—Mexborough cty. inf., £20,000 (estimated); Edenthorpe cty. inf., £20,000; Stocksbridge cty. inf., £40,000; Rawdon jun. and inf., £31,000; Cudworth cty. inf., £40,000; Batley Staincliffe cty. jun., £50,000; adaptations of camp buildings at Aberford, £12,000; extensions to Percy Jackson gram. sch., Adwick-le-Street, £40,000 (estimated); and first instalment of Harrogate sch. of art, £115,000 (estimated).

Whitefield.—T. Duffy, architect to Manchester Regional Hospital Board, Sunlight-hse., Quay-st., Manchester 3, has prepared plans for proposed new hospital at Higher-la., for Board.

Wigan.—T. Duffy, A., Quay-st., Manchester 2, has prepared plans for rehabilitation and physiotherapy departments at Infirmary, to cost £31,439, for Manchester Regional Hospital Board.

Worcs.—E.C. propose following sec. schs. in 1953 programme:—Brandhall, Oldbury, £138,000 (estimated); Halesowen, £130,000 (estimated); and Bromsgrove, £100,000 (estimated).

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TENDERS

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government Departments.*

Ashington.—Work has commenced on the erection of coal-washing plant for Northern Coal Board: *Mitchell Engineering Group, London.

Baildon.—Ten shops, eight houses, one flat and nine garages at Knoll estate for U.D.C. *F. Robinson & Sons, Fairwether Green, Bradford.

Bakewell.—Houses for R.D.C.:—Six at Great Longstone, *Furniss & Hassall, Ltd., £9,538; six at Ashford, *M. & J. C. Turner, Ltd., £9,419; and three at Tideswell, *Frank Hill, £3,925.

Barrow-on-Soar.—34 houses at Syston for R.D.C., *Jelson, Ltd., Shenton-st., Leicester, £50,112.

Birmingham.—First instalment of Garretts Green sec. sch., for E.C.: *C. Bryant & Son, Ltd., 65, Whitmore-rd., Birmingham, £122,487.

Birmingham.—Erection of Sparkhill Methodist Church and Schools, *Smith Bros. (Construction), Ltd., Birmingham.

Birmingham.—New chemical laboratories for the University, *J. R. Deacon, Ltd., Lombard-st., Lichfield.

Blantyre.—200 houses for Lanarkshire C.C. Samuel MacColl (F.), architect, County Chbrs., Beckford-st., Hamilton. Scottish Orlit, Ltd., Edinburgh, £340,529.

Bradford.—Houses for T.C. at Harrogate-rd.: *H. G. Brooke, 12a, Halstead-pl., Bradford (60); and *T. A. Rae, 3, Green-cl., Bullroyd-la., Bradford (10).

Bucklow.—25 houses at Moss-la. and Worthington-av., and 48 at Hall-la., Partington, for R.D.C.: *W. A. Costello, 212, Northenden-rd., Sale, Cheshire.

Caistor.—Eight houses and four bungalows at Nettleton, for R.D.C.: *C. & W. Edwards, Ltd., 30, Parkhouse-la., Cleethorpes, £15,733; and nine

houses at South Kelsey: *G. E. Sargentson & Son, North-st., Crawle, £14,484.

Chesterfield.—Houses for T.C.: *H. Buckley & Co. (14); *James Haslam (20); *Arthur Needham (10); and six at Newbold estate: *W. Drabble & Sons, £7,782.

Chesterfield.—166 houses at Newbold- and Calow-la.: *Butterfly Co., Ltd., Ripley, Derbys.

Corby.—U.D.C. to build two blocks of shops at new housing estates: *Drury & Co., Ltd., Leicester, £28,000.

Criccieth.—Six houses at Tyn Rhos, for U.D.C.: *Meredydd Rowlands, 1, Tainewyddion, Llanystumdwy, £8,875.

Derbyshire.—Police houses for C.C.:—Two at Hurst Farm estate; two at Starkholme-rd.; two at West Crescent; and 10 firemen's houses: *J. W. Wildgoose & Sons, Ltd., Matlock, £39,846; two police houses with office and garage at Park-rd. estate, Chapel-en-le-Frith: *G. D. Rodgers, Buxton, £5,211.

Durham.—Erection of rural domestic economy centre at Houghall sch. of Agriculture, for C.C.: *David Glen, Ltd., Albert-rd., Jarrow, £15,700.

East Kilbride.—Completion of electrical installation at new Rolls-Royce jet factory: *James Kilpatrick & Son, Ltd.

Exeter.—178 houses at Whipton Barton housing estate, for T.C.: *S.W. Federation of Building Trades Employers, £234,626 (subject to M.H. & L.G. approval).

Exeter.—30 dwellings at Whipton Barton, for T.C.: *Master Builders' Federation, £40,142 (subject to M.H. & L.G. approval).

Fradley.—Erection of additional sleeping quarters and officers' married quarters at R.A.F. Station: *J. R. Deacon, Ltd., Lombard-st., Lichfield, £250,000.

Glasgow.—Erection of new public primary school at Berryburn-rd. (site No. 10), Barmulloch. John MacNab (F.), architect, 129, Bath-st., Glasgow, W.C.2. Excavation, concrete, brick, building and allied works, *A. A. Stuart & Sons, Ltd., £50,941. Joinery, carpentry and allied works, *Wylie & Lochhead, Ltd., £12,348. Plumber, sanitary engineering and allied works, *Hugh Twaddle & Co., Ltd., £2,383. Reinforced concrete and allied works, *A. A. Stuart & Co., Ltd., £28,542. Steel windows and casements and allied works, *The Crittall Manufacturing Co., Ltd., £8,098. (Other contracts let.)

Hemel Hempstead.—Construction of factory for Rotax, Ltd.: *J. Jarvis & Sons, Ltd., 12, Buckingham Palace-gdns., S.W.1, £725,000.

Lewisham.—32 traditional flats at Whitefoot-la., Catford, for B.C.: *Wates, Ltd., 1258-1260, London-rd., S.W.16, £54,863.

Leyton.—27 maisonettes and flats at Park Grove-rd., for B.C.:—

Cawood, Wharton & Co., Ltd., S.E.7	£51,318
J. & J. Dean, Ltd., E.10	49,680
F. J. Coxhead & Co. (Leytonstone), Ltd., E.15	48,511
C. H. Beckwith, Ltd., Southend-on-Sea (Subject to M.H. & L.G. approval.)	46,795

Six flats at Leslie-rd., for B.C.:—

Cawood, Wharton & Co., Ltd., S.E.7	£11,560
J. & J. Dean, Ltd., E.10	11,220
A. E. Wright & Sons, E.10	10,865
C. Paine & Sons, E.10 (Subject to M.H. & L.G. approval.)	10,281

Nine flatted houses at various sites, for B.C.:—

Cawood, Wharton & Co., Ltd., S.E.7	£17,563
F. Goff & Sons, Ltd., E.7	16,140
J. & J. Dean, Ltd., E.10	15,490
Reader Bros., E.9	15,167
C. Paine & Sons, E.10 (Subject to M.H. & L.G. approval.)	14,414

54 maisonettes and flats at Thornhill redevelopment area, for B.C.:—

W. Lawrence & Son, Ltd., E.C.2	£105,492
J. & J. Dean, Ltd., E.10 (Subject to M.H. & L.G. approval.)	103,007

39 maisonettes and flats at Livingstone College site, for B.C.:—

Gratton, Wilson, Ltd., E.15	£56,731
W. Lawrence & Son, Ltd., E.C.2	55,752
A. E. Symes, Ltd., E.15	55,718
J. & J. Dean, Ltd., E.10 (Subject to M.H. & L.G. approval.)	51,866

Lichfield.—Reconstruction of public baths, for T.C.: *R. T. Rix & Son, 2, Clarence-rd., Birmingham.

Liverpool.—New St. Swithin's sch. at Gillmoss (phase 1): *C. J. Doyle & Sons, Mount Pleasant, Liverpool, £23,100.

London.—Rebuilding, etc., at premises, for Schweppes, Ltd., Connaught-pl., Marble Arch: *Rice & Son, Ltd., 15, Stockwell-rd., S.W.9.

London (Admiralty).—Particulars of contracts placed by Civil Engineer-in-Chief's Dept., Admiralty:—

Norfolk: Repairs to buildings, W. T. Pickering and Sons, Ltd., 19, Watford Heath, Watford, Herts. *Portsdown*: Construction of Laboratory and other works, R. J. Winnicott, Ltd., Copnor-rd., Portsmouth. *Herstmonceux*: Greenwich transit circle building, G. H. Burgess and Co., Ltd., Havelock-rd., Southall, Middlx. *Portsmouth*: Installation of pipework, etc., Matthew Hall and Co., Ltd., 26/28, Dorset-sq., N.W.1.

London (Air Ministry).—Contracts placed by Directorate of Contracts to the value of £500 or over for the week ended February 2:—

Building work: Geo. Wimpey and Co., Ltd., London, W.6; Hussey Egan and Pickmere, Birmingham; F. Shepherd and Son, Ltd., York. *Resurfacing work*: Roads Reconstruction (1934), Ltd., Frome, Somerset.

L.C.C.—Erection of 56 flats at Arden estate:—

Gee, Walker & Slater, Ltd., Westminster	£119,375
C. Miskin & Sons, Ltd., St. Albans	119,350
Y. J. Lovell & Son, Ltd., Paddington	116,863
Leslie & Co., Ltd., Kensington	116,011
Stewart & Partners, Ltd., St. Marylebone	115,900
A. E. Symes, Ltd., Stratford	115,762
W. J. Simms, Sons & Cooke, Ltd., Westminster	114,722
Tersons, Ltd., Finsbury	114,269
H. C. Horswill, Ltd., Forest Gate	113,420
*Rowley Bros., Ltd., Tottenham	113,138

The comparable estimate of the architects, Messrs Arcon, is £122,752.

Construction of foundation at King's Park Comprehensive High School:—

M. J. Gleeson (Contractors), Ltd., Cheam	£59,534
Patman & Fotheringham, Ltd., Islington	59,311
Stewart & Partners, Ltd., St. Marylebone	58,174
Lavender McMillan, Ltd., Worcester Park	57,903
A. T. Rowley (London), Ltd., Tottenham	56,914
Gilbert Ash, Ltd., Westminster	56,597
Gough, Cooper Co., Ltd., Wilmington	55,993
C. P. Roberts & Co., Ltd., Holborn	55,390
Rush & Tompkins, Ltd., Westminster	54,760
J. Garrett & Son, Ltd., Wandsworth	54,190
Thomas & Edge, Ltd., Woolwich	53,516
*E. H. Smith (Croydon), Ltd., Croydon	52,172

The architect's comparable estimate is £51,745.

War damage repairs and improvements at Plumcroft County prim. school:—

Herbert Richardson & Sons, Ltd., Crayford	£25,150
William Mills & Sons, Ltd., Greenwich	24,948
Messrs. Hill & Gurr, Bromley	23,984
Whyatt (Builders), Ltd., Wandsworth	23,883
Field-Davies, Ltd., Barking	23,837
Truett & Steel, Ltd., Thornton Heath	23,720
A. J. Dunning & Sons (Weyhill), Ltd., Woolwich	23,665
Halse & Sons, Ltd., Woolwich	23,338
Thomas & Edge, Ltd., Woolwich	22,707
F. Troy & Co., Ltd., Southwark	22,412
Frederick Smith & Co. (Builders), Ltd., Camberwell	22,334
Greenaway & Son, Ltd., Camberwell	22,234
*J. & C. Bowyer, Ltd., Croydon	21,595

The comparable estimate of the architect is £21,859.

Erection of 46 flats in three blocks at Burgess Hill estate, Hampstead and Hendon:—

Harry Neal, Ltd., St. Marylebone	£107,324
Thomas & Edge, Ltd., Woolwich	106,689
Y. J. Lovell & Son, Ltd., Paddington	104,432
Hall Beddall & Co., Ltd., Lambeth	102,432
Allen Fairhead & Sons, Ltd., Enfield	98,378
Tersons, Ltd., Finsbury	98,350
William Moss & Sons, Ltd., Cricklewood	98,244
M. J. Gleeson (Contractors), Ltd., Cheam	97,867
Sloggetts (Contractors), Ltd., Kensington	96,855
A. T. Rowley (London), Ltd., Tottenham	95,542
*W. J. Simms, Sons & Cooke, Ltd., Westminster	94,848

Construction of flats at China Walk estate extension and Sumner estate extension:—

Thomas & Edge, Ltd., Woolwich	£122,993
William Nicholson & Son (Leeds), Ltd., E.C.4	122,871
Prestige & Co., Ltd., Westminster	122,475

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M. J. Gleeson (Contractors), Ltd., North Cheam ... 120,966
Percy Bilton, Ltd., Westminster ... 120,750
Rowley Bros., Ltd., Tottenham ... 120,123
Gee, Walker & Slater Ltd., Westminster ... 119,891
Tersons, Ltd., Finsbury ... 118,564
*The Unit Construction Co., Ltd., Feltham ... 117,596

The comparable estimate of the director of housing and valuer is £109,606.

Erection of 85 flats at Oaklands estate:—

F. Troy & Co., Ltd., Southwark	£105,750
Rowley Brothers, Ltd., Tottenham	105,150
Harry Neal, Ltd., St. Marylebone	104,720
E. H. Smith (Croydon), Ltd., Croydon	104,630
Hall Beddall & Co., Ltd., Lambeth	104,496
William Nicholson & Son (Leeds), Ltd., E.C.4	104,160
Geo. Parker & Sons Ltd., Camberwell	104,151
Thomas & Edge, Ltd., Woolwich	103,752
E. Clarke & Sons, Ltd., Addlestone	102,793
William Moss & Sons, Ltd., Cricklewood	101,512
*Henry Boot & Sons, Ltd., Kensington	98,092

The comparable estimate of the director of housing and valuer is £97,959.

Construction of 314 flats, 107 maisonettes and 16 houses at Princes Way and Wimbledon Park Side:—

Sir Robert McAlpine & Sons, Ltd., Westminster	£479,971
Holloway Brothers (London), Ltd., Westminster	471,424
Wates, Ltd., Norbury	453,345
Rush & Tompkins, Ltd., Westminster	450,877
*Tersons, Ltd., Finsbury	447,978

The architect's comparable estimate is £435,000.

Construction of superstructure of 46 flats; two-storey building, containing laundry and club-room; 21 sheds; and fitted playground:—

Patman & Fotheringham, Ltd., Islington	£96,845
A. T. Rowley (London), Ltd., Tottenham	94,721
W. M. Shurmur & Sons, Ltd., Hackney	93,944
F. R. Hipperson & Son, Ltd., E.C.2	93,597
Stewart & Partners, Ltd., St. Marylebone	91,650
Y. J. Lovell & Son, Ltd., Paddington	91,347
Galbraith Bros., Ltd., E.C.1	90,960
Gee, Walker & Slater, Ltd., Westminster	90,887
Thos. Bates & Son, Ltd., Harold Wood	87,750
Thomas & Edge, Ltd., Woolwich	86,213
*Tersons, Ltd., Finsbury	84,917

The architect's comparable estimate is £84,832.

Erection of 24 flats, and other work at Lancaster-st. site, Southwark:—

J. & J. Dean, Ltd., Leyton	£57,140
H. T. Oliver & Sons, Ltd., Lambeth	55,956
J. & C. Bowyer, Ltd., Lambeth	55,120
Frank Batty & Smith, Ltd., Westminster	55,100
Gough, Cooper & Co., Ltd., Wilmington	54,933
Leslie & Co., Ltd., Kensington	54,620
J. Garrett & Son, Ltd., Wandsworth	54,120
F. Troy & Co., Ltd., Southwark	53,246
J. M. Hill & Sons, Ltd., Wembley	52,369
Herbert Richardson & Sons, Erith	52,274
*W. J. Marston & Son, Ltd., Fulham	50,128

The architect's comparable estimate is £52,724.

Erection of 100 flats in three blocks and other work at Vauxhall Gardens estate, Lambeth (Tate-st. site):—

Foster & Dicksee, Ltd., St. Marylebone	£207,766
C. P. Roberts & Co., Ltd., Holborn	206,245
Geo. Parker & Sons, Ltd., Camberwell	205,756
Galbraith Bros., Ltd., E.C.1	205,340
Kent & Sussex Contractors, Ltd. (now Rush & Tompkins, Ltd.), Westminster	204,876
Griggs & Son, Ltd., Westminster	204,847
Allen Fairhead & Sons, Ltd., Enfield	203,950
Speirs, Ltd., Westminster	201,834
Walter Lawrence & Son, Ltd., E.C.2	201,732
Tersons, Ltd., Finsbury	198,842
E. H. Smith (Croydon), Ltd., Croydon	192,564
Halse & Sons, Ltd., Woolwich	190,974
*Thomas & Edge, Ltd., Woolwich	189,900

The comparable estimate of the appointed architect is £197,962.

¶London (M.O.W.).—Contracts placed by M.O.W. during week ended January 26:—

Aberdeen: Head Post Office Telephone Exchange, Alterations, Alex. Hall & Son, 37, College-bounds, Fraserburgh. *Hampshire*: Barton Stacey, Erection of 48 houses, Y. J. Lovell & Son, Ltd., Marsham-la., Gerrards Cross, Bucks. *Shropshire*: M/F Airfield, Rednal, Adaptations, Simon Jones, Ltd., 10, Beatrice-st., Oswestry.

Staffordshire: Telephone Exchange, Stoke-on-Trent, Alterations and adaptations, S. Poole, Ltd., 37, Liverpool-rd., Newcastle, Staffs. *Suffolk*: Foxhill Telephone Exchange, Ipswich, Extension, R. Bennett & Snare, Ltd., New-st., Ipswich. *Yorks*: M.N.I., Westfield-rd., Hemsworth, Erection of two-storey office building, Hy. Field & Son (Contractors), Ltd., Stairfoot, Barnsley.

¶London (War Dept.).—Works contracts placed by W.D. during week ended January 26:—

Yorkshire: Civil engineering, Holland & Hannen and Cubitts, Ltd., Wallsend-on-Tyne. *Leicestershire*: Miscellaneous, F. E. Winterton, Ltd., Leicester. *Northumberland*: Miscellaneous, T. Norris, North Shields. *Yorkshire*: Structural steelwork, A. G. B. Allton & Co., Ltd., St. Helens.

Middlesex: Structural steelwork, R. Smith (Horley), Ltd., Horley, Surrey. *Lancashire*: Concrete work, Holland & Hannen and Cubitts, Ltd., Garston, Liverpool 19. *Dumbartonshire*: Hutting, Spiers, Dick & Smith, Glasgow. *Berkshire*: Roadwork, Y. J. Lovell & Sons, Ltd., Gerrards Cross. *Wilt-*

shire: Provide blinds, Deans Blinds (Putney), Ltd., Putney, S.W.15.

Merthyr Tydfil.—30 houses at Llettyshenkin, for T.C.: *Direct Labour. £42,930.

Nelson.—10 houses at Marsden Park estate, for T.C.: *Direct Labour.

Newcastle-on-Tyne.—Alterations to Moorlands, Kenton Lodge training college, for E.C. Plans by City A., 18, Cloth-market, Newcastle: †R. Bowey & Son, Ltd., Back Raby-st., Newcastle, £13,759.

Newcastle-on-Tyne.—Erection of rest sheds, to cost about £5,000, at Pendower Open-air sch., for E.C.: *R. Bowey & Son, Ltd., Back Raby-st., Newcastle.

Northumberland.—Five houses at Amble: *T. Sample, The Wynd, Amble.

Northumberland.—Erection of old people's home at Tweedmouth, for C.C. Plans by Cty. A., C. C. Brown, County Hall, Newcastle-on-Tyne: *Berwick Building Co., Ltd., Berwick. £17,980.

Nuneaton.—24 houses at Gorsey Knob, for B.C.: *Coltman & Sons (Coventry), Ltd., £31,250.

Nuneaton.—66 houses at Whittleford-rd. housing estate, for B.C.: *Wates, Ltd., 1258-1260, London-rd., S.W.16, £89,182.

Otley.—20 houses at Weston-la., for U.D.C.: †T. Smith, Ltd., Otley.

Poplar.—55 dwellings at East Ferry-rd. for B.C.

E. A. Roome & Co., Ltd., E.9	£103,065
Griggs & Son, Ltd., S.W.1	102,598
Thomas & Edge, Ltd., S.E.18	101,123
Galbraith Bros., Ltd., E.C.1	99,824
Y. S. Lovell, Ltd., W.2	99,405
W. J. Cearns, Stratford, E.15	98,349
A. E. Symes, Ltd., E.15	98,195
E. Clarke & Sons, Addlestone	95,430
G. Hudson & Co., E.18	94,423
*Borough Engineer and Surveyor	86,337

Redcar.—Erection of eight bungalows in MacLean-ave., for T.C.: *Fletcher & Hall, Ltd., Lord-st., Redcar, £8,196.

Redcar.—Four bungalows at Maple-sq., for T.C.: *Sharp & Beever, Ltd., Cleveland-st.

Rochdale.—Apprentices' training sch. for Tweedale & Smalley (1930), Ltd., Castleton: *R. Partington & Son, Lodge-st., Middleton.

Sale.—14 houses and 32 flats at Baguley-la. site, for B.C.: *F. Entwisle & Co., Ltd., Broadway, Davyhulme, £67,929.

Shrewsbury.—80 houses at Meadows estate, for B.C.: *Wates, Ltd., 1258-1260, London-rd., S.W.16, £120,305.

Skipton.—Public lavatories at bus station, for U.D.C.: *W. V. Patrick (Builders), Ltd., Grassington, £7,450.

Stockport.—New factory and offices for Thos. Storey (Engineers), Ltd.: *Direct Labour.

Stone.—72 houses at Lichfield-rd. site, for U.D.C.: *M. A. Boswell (Contractors), Ltd., Manby-st., Wolverhampton.

Wallsend.—Jetty extensions at Willington Quay, for Clelands (Successors), Ltd.: *J. G. Thompson & Sons, Ltd., Fowler-st., South Shields.

Warrington.—21 houses off Parksway, Woolston, for R.D.C.: *E. Lunt & Son, 6, Lord Nelson-st., Warrington.

West Hartlepool.—106 houses for T.C. Plans by Boro' A., A. G. Sinclair: *Leslie & Co., Darlington.

Wolverhampton.—Erection of police houses for B.C.—Four at Highlands-rd.: *F. M. Healey, Ltd., Wolverhampton-rd., Heath Town, £6,389; and two at Essington-way and four at Dixon-st.: *Direct Labour, £11,261.

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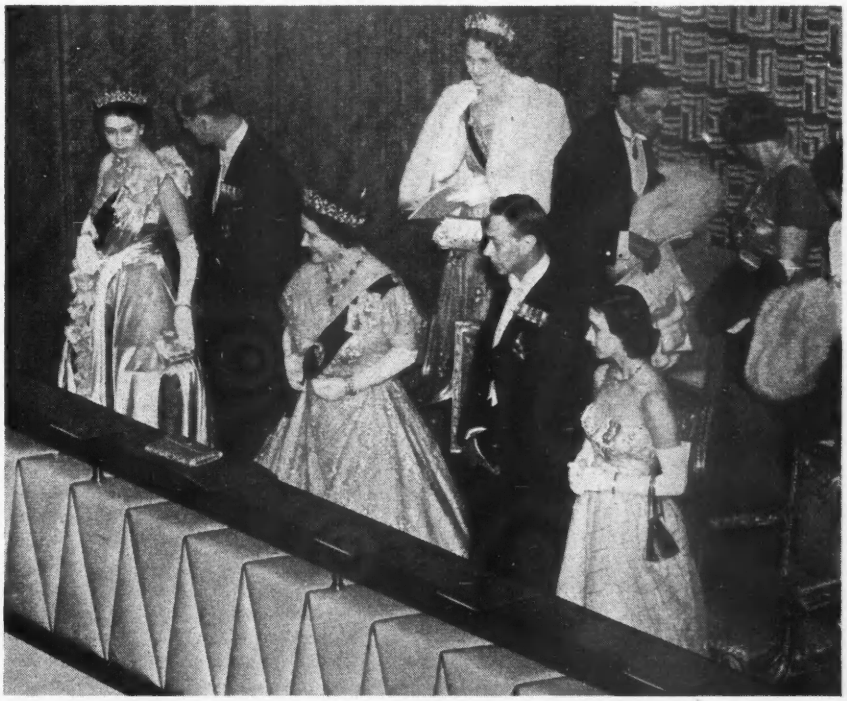
KING GEORGE VI

AS the body of King George VI is borne to-day to its last resting place within the historic walls of St. George's Chapel, Windsor, to lie with the mortal remains of many of his Royal ancestors, the thoughts of his people throughout the world will go out in heartfelt sympathy to the young Queen, the Queen Mother, Queen Mary and the other members of the Royal Family in their sorrow and distress.

The late King, by his kindliness of character, his devotion to the welfare of his peoples, his fortitude and resolution in face of the unexampled perils and burdens of his reign, his courage under acute physical suffering, set a shining example to all, and he had nobly earned the respect and affection which were so spontaneously accorded him. High qualities of character have already been shown by the young Queen who now ascends the Throne. The loyal support and affection of all her subjects will go out to her as she assumes the heavy burdens and responsibilities of her Imperial office and, with her gracious Consort by her side, faces the many problems and difficulties of our times at home and abroad. That her reign may be long, prosperous, happy and peaceful is the heartfelt wish of us all.



KING GEORGE VI, on the occasion of the opening of the Royal Festival Hall on May 3, 1951. *This was one of his last public appearances. "The scene (we wrote at the time) when the King and Queen with their daughters and the Duke of Edinburgh entered the Royal Box, and the whole audience, choirs and orchestra rose and sang the National Anthem, was unforgettable." The name of the Hall was suggested by the King.*